Service Manual

COMPACT LINE THERMAL PRINTER
CT-S851 Series

Revision 1.00 2010.2.25

CITIZEN SYSTEMS JAPAN CO., LTD.

REVISIONS

Rev No.	Date	Page	Comment
1.00	2010/2/25		Newly issued

CONTENTS

INTRODUCTION

This manual describes the disassembly, reassembly, and maintenance procedures of CT-S851 Series.

1. DISASSEMBLY AND REASSEMBLY

Note the following items when performing maintenance of the printer.

- Do not disassemble, reassemble, or adjust the printer unnecessarily when the printer operation is satisfactory.
- Do not loosen the screws that fasten the components unless it is absolutely necessary.
- After finishing inspection, perform a check to ensure that there is no irregularity before turning on the printer.
- Use caution not to leave any part or screw used for maintenance inside the printer.
- When handling the print head and electronic components, care must be taken to avoid static electricity.
- When disassembling or reassembling the printer, check the wires and cords for damage. Do not draw any wire or cord by force.
- Lubricate the components as necessary when reassembling them.

1-1. Tools Used

- Phillips screwdriver #0, #1, and #2
- Tweezers
- Long-nose pliers
- Brush

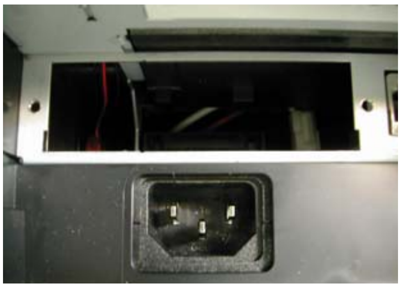
1-2. Disassembly Procedure

1-2-1. Disassembling the Printer

1. Disassembling "UNIT, I/F PCB"

Remove two "SCREW, BHT (ST), M3.0 × 6" that fasten "FRAME, BOTTOM" and "UNIT, I/F PCB".



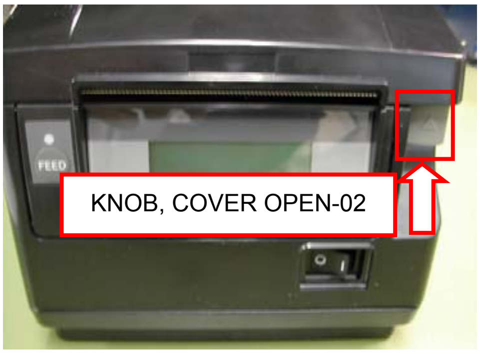


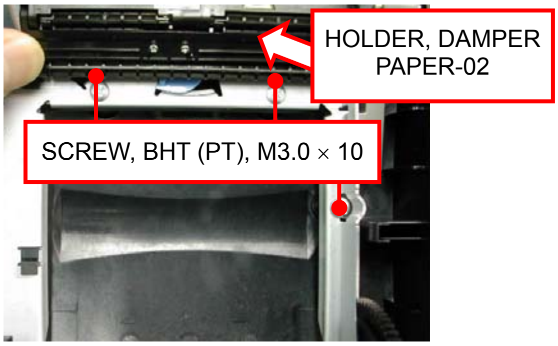
2. Disassembling "SA, COVER-02"

Push "KNOB, COVER OPEN -02" upward and open "SA, COVER-02".

Remove three "SCREW, BHT (PT), M3.0 × 10" and remove "SA, COVER-02" from "COVER, FRAME".

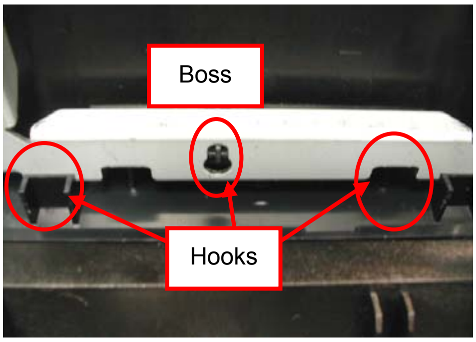
Hold "HOLDER, DAMPER PAPER-02" by hand until two screws come into view, and remove the two screws.

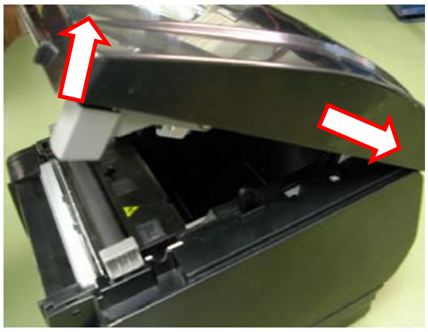


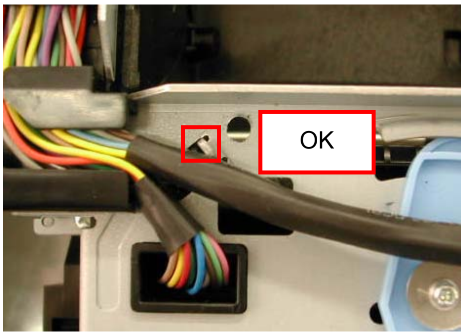


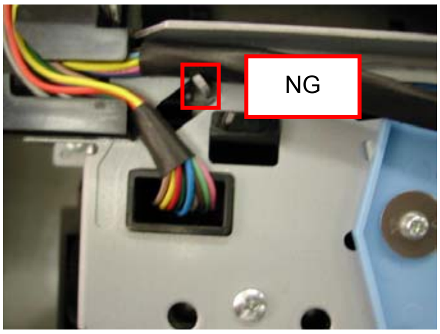
Since “SA, COVER-02” is secured with hooks and the boss, it cannot be removed easily when it is fully opened. To remove “SA, COVER-02”, slightly close it by hand, raise its front edge, and slide it backward.

When mounting “SA, COVER-02”, align the boss with the hole at “COVER, FRAME” and slide “SA, COVER-02” upward with hooks inserted into “COVER, FRAME”.









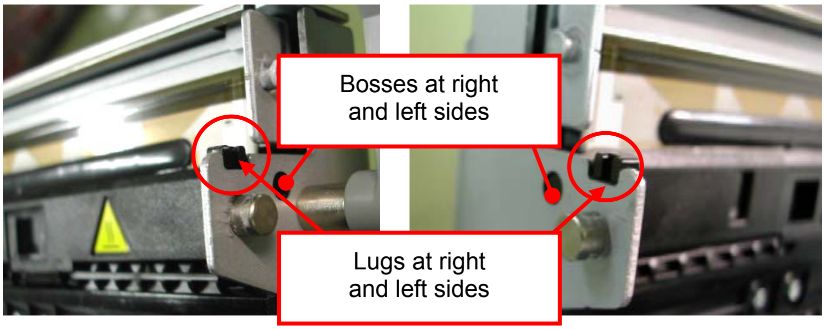
<Precaution at disassembly / reassembly>

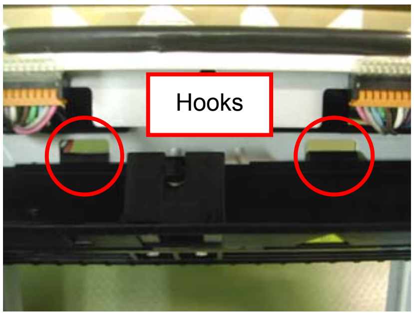
The hooks and the boss at “SA, COVER-02” are engaged on “FRAME, COVER”. Carefully disassemble or reassemble the components so as not to damage them. Check the routing of “SA, HEAD CABLE-02”.

3. Disassembling "SA, HEAD COVER"

Detach the lugs from the notches at the right and left sides of "COVER, FRAME", and move down "SA, HEAD COVER" and pull it out with care so as not to damage the lugs.







<Precaution at reassembly>

Hang the hooks at "SA, HEAD COVER" on "COVER, FRAME" and raise "SA, HEAD COVER" using these hooks as fulcrums. Let the bosses at the right and left sides of "SA, HEAD COVER" fit into the holes at "COVER, FRAME", and engage the lugs to secure "SA, HEAD COVER".

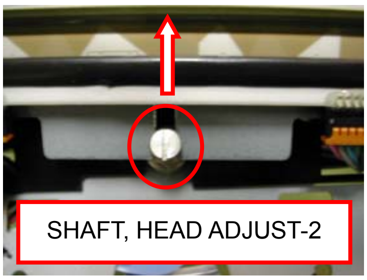
4. Disassembling "SA, THERMAL HEAD-02"

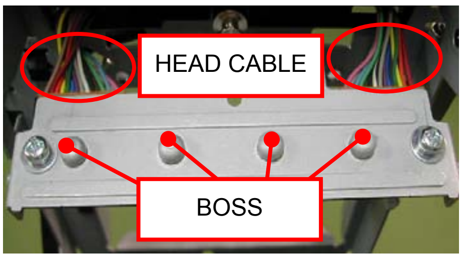
Move down "HOLDER, HEAT SINK-02" by pressing the edges at the right and left sides. "SA, THERMAL HEAD-02" is detached from lugs at "COVER FRAME".

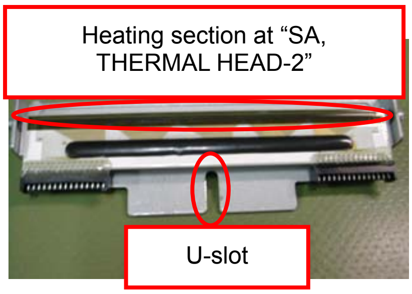
Pull "SA, THERMAL HEAD-02" out from "SHAFT, HEAD ADJUST-2" along the U-slot, and disconnect "HEAD CABLE" from two positions.













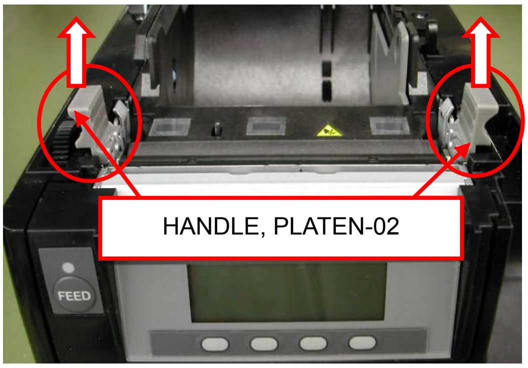
<Precaution at reassembly>

“SA, THERMAL HEAD-02” is electrostatically sensitive. Avoid contacting the heating section.

When reassembling, insert the U-slot into “SHAFT, HEAD ADJUST-2”, and let the bosses fit into “SPRING, HEAD-02”. Press the both sides at “HOLDER, HEAT SINK-02” and engage the lugs at “COVER, FRAME” on “HOLDER, HEAT SINK-02”.

5. Disassembling “SA, PLATEN UNIT-02”

Raise “HANDLE, PLATEN-02” on both sides, and pull “SA, PLATEN UNIT-02” out from “SA, MAIN FRAME”.



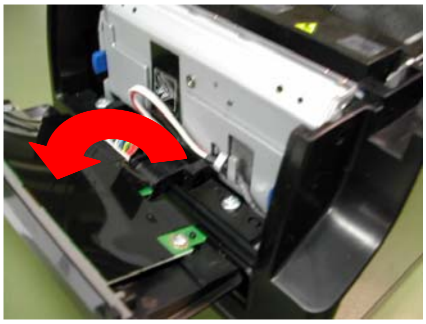


6. Disassembling “SA, CUTTER UNIT-02”

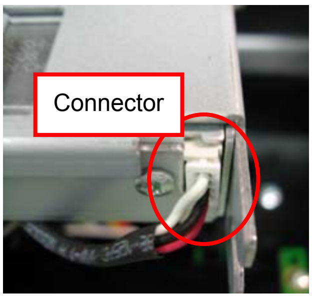
Push “PIN, FRONT COVER” at the right side of “SA, CASE-02” using a sharp-pointed tool. Raise “FRONT COVER-02” and flip it down toward you to open it. When “LEVER, CUTTER RELEASE-02” at the right and left sides are pushed down, “SA, CUTTER UNIT” pops out. Pull it out upwardly and disconnect cables from the connector.









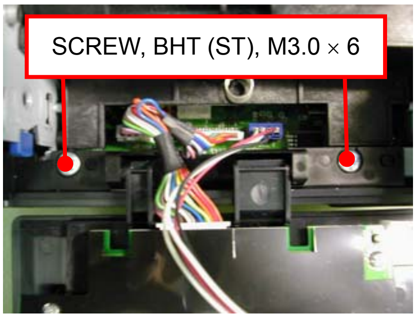




7. Disassembling “SA, FRONT COVER-02”

Remove two “SCREW, BHT (ST), M3.0 × 6” that fasten “SA, FRONT COVER-02” and “SA, MAIN FRAME” and disconnect “SA, OPEPANE CABLE F” from the connector.

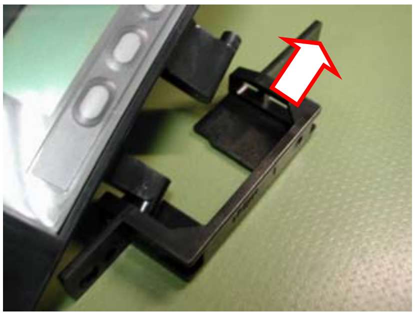
Remove “HOLDER, FRONT COVER-02” from “SA, FRONT COVER-02”.







Remove “HOLDER, FRONT COVER-02” while pulling its side edge outwardly.



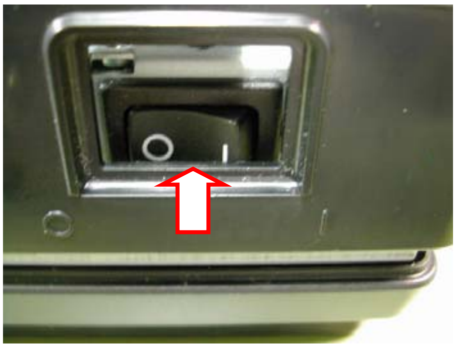


8. Disassembling “SA, CASE-02”

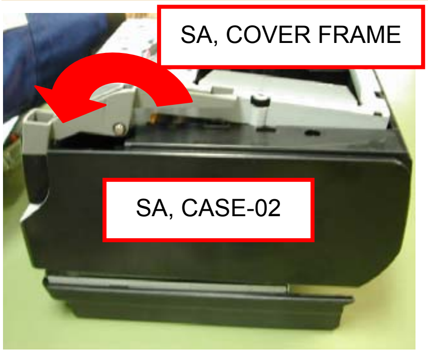
Remove two “SCREW, BHT (ST), M3.0 × 6” that fasten “SA, CASE-02” and “SA, MAIN FRAME”.

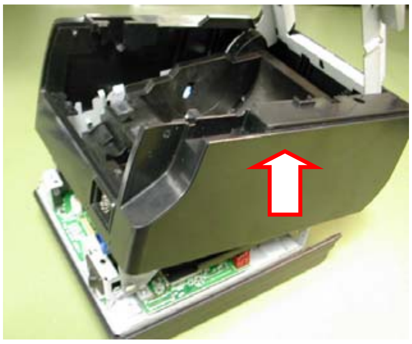
Raise the front edge of “SA, CASE-02” while slightly pressing “POWER SW” at the front.

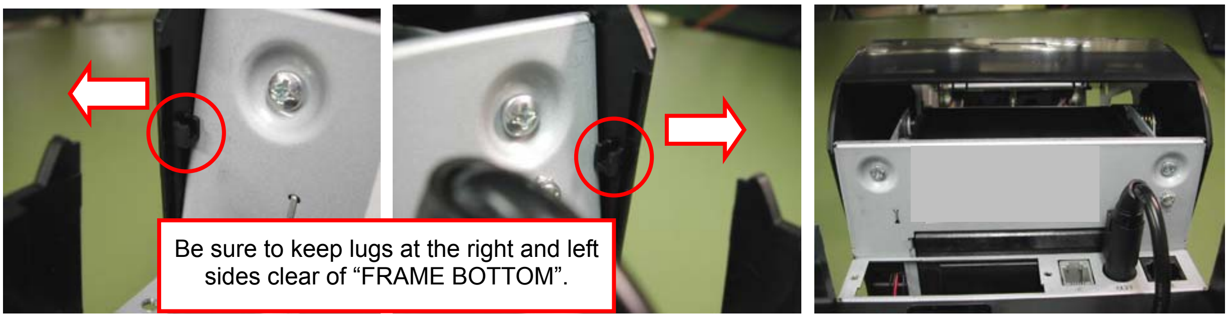




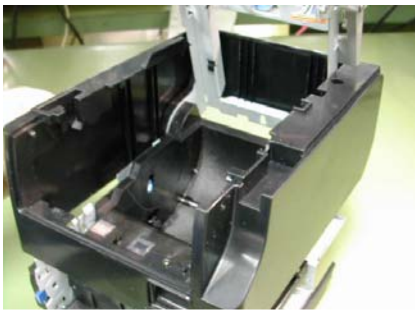
Close “SA, COVER FRAME” slightly, and raise “SA, CASE-02” while pulling the right and left edges of “SA, CASE-02” outwardly. When “SA, CASE-02” is raised slightly, release “SA, COVER FRAME” and raise “SA, CASE-02” further while pulling the right and left edges outwardly and keeping the lugs at the rear clear of “FRAME, BOTTOM”.



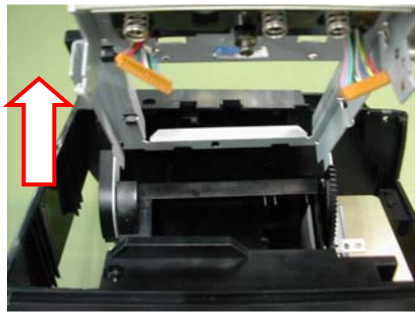




Raise “SA, CASE-02” along “SA, COVER FRAME”. When “SA, CASE-02” is raised to the position indicated in the photo below, turn it counterclockwise and pull it upwardly to remove it.



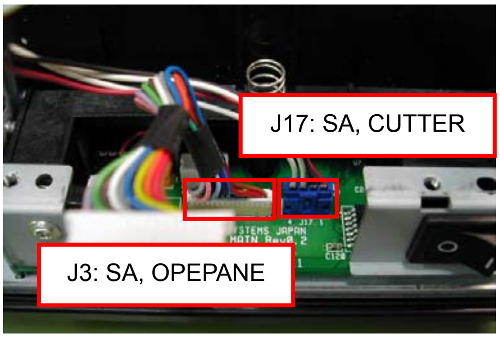


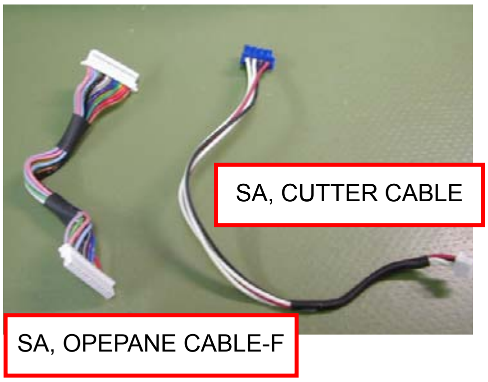


<Precaution at disassembly / reassembly>

Do not assemble or disassemble “SA, CASE-02” by force. When removing “SA, CASE-02”, raise it little by little. When reassembling, follow the disassembly procedure in reverse. Face the front panel of “SA, CASE-02” to the right, pass it through “SA, COVER FRAME”, and turn it clockwise. When the front faces toward you, pull the right and left panels of “SA, CASE-02” outwardly and keep the lugs at the rear clear of “FRAME, BOTTOM”. Push “SA, CASE-02” downward while closing “SA, COVER FRAME”.

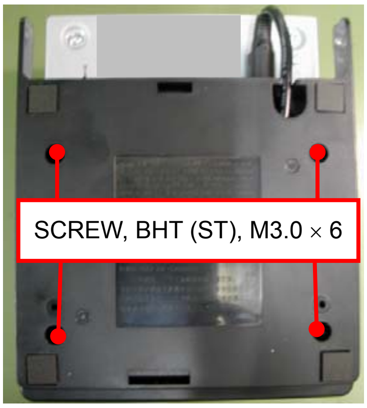
Remove “SA, OPEPANE CABLE-F” and “SA, CUTTER CABLE”.



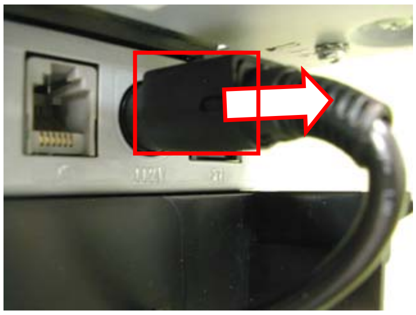


9. Disassembling “COVER, ADAPTER”

Remove four “SCREW, BHT (ST), M3.0 × 6” that fasten “COVER, ADAPTER” and “FRAME, BOTTOM”.



Remove the AC adaptor cable from the power connector. (Note that this connector is of the lock type.)



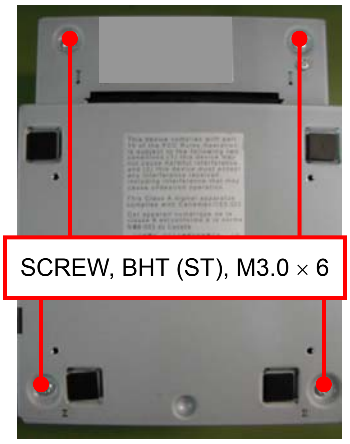
<Precaution at disassembly / reassembly>

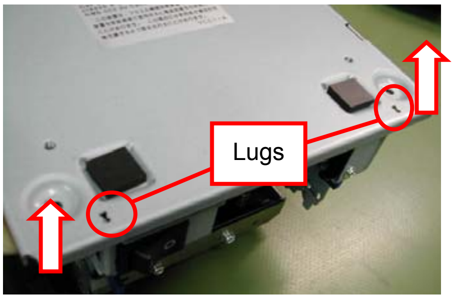
The power connector is a lock-type connector. Unlock the connector by pulling the outer slide at the end of the connector to disconnect the cable. When fitting the connector, insert it until it clicks and ensure that it cannot be removed easily.

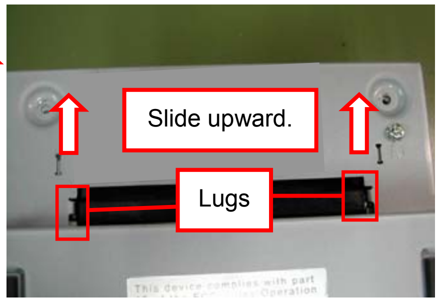
10. Disassembling "FRAME, BOTTOM"

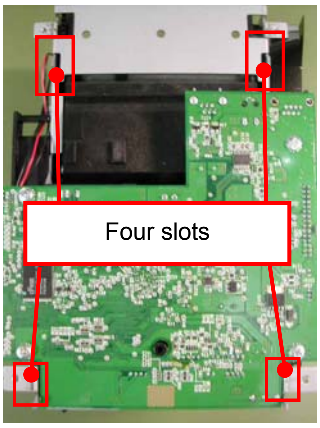
Remove four "SCREW, BHT (ST), M3.0 × 6" that fasten "FRAME, BOTTOM" and "SA, MAIN FRAME".

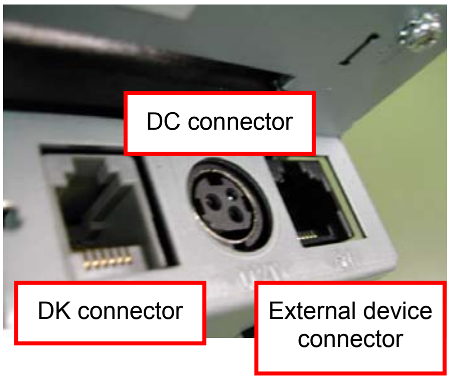
Detach the lower lugs and raise "FRAME, BOTTOM". Slide "FRAME, BOTTOM" upward to detach upper lugs from "SA, MAIN FRAME".

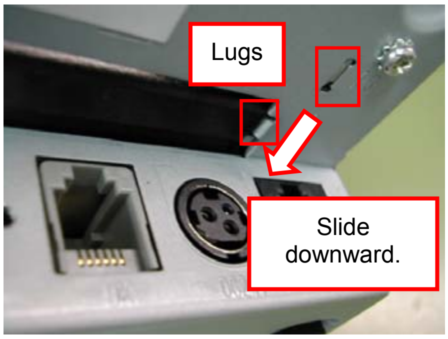












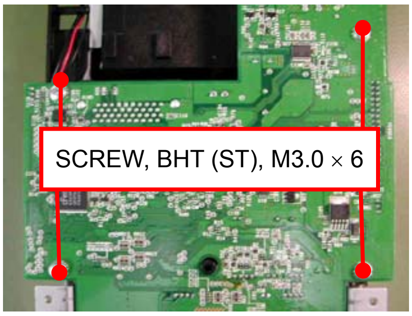
<Precaution at disassembly / reassembly>

When dismounting or mounting "FRAME, BOTTOM", be careful not to damage the DC connector, DK connector, and external device connector. When mounting "FRAME, BOTTOM", align the lugs with four slots, at which "FRAME, BOTTOM" is to be secured, slide it downward to engage the lugs, and fasten it with screws.

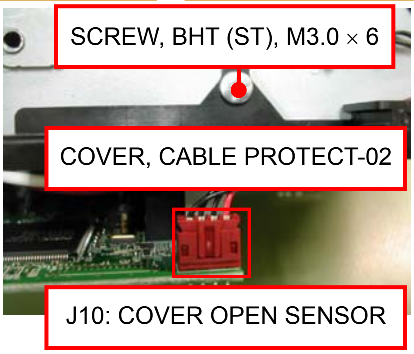
Be careful not to allow connectors to interfere with each other in order to prevent deformation.

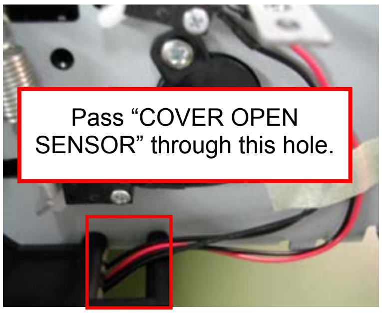
11. Disassembling “UNIT, MAIN PCB”

Remove four “SCREW, BHT (ST), M3.0 × 6” that fasten “UNIT, MAIN PCB” and “SA, MAIN FRAME”.

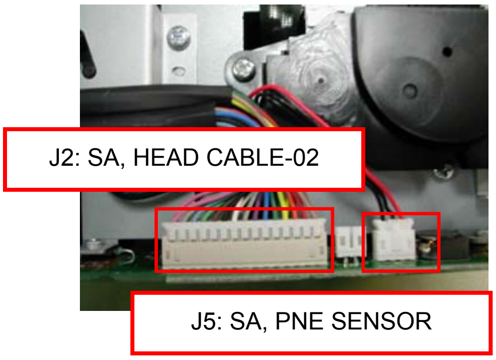


Remove one “SCREW, BHT (ST), M3.0 × 6” that fastens “COVER, CABLE PROTECT-02” at the right side, and disconnect the connector of “COVER OPEN SENSOR”.

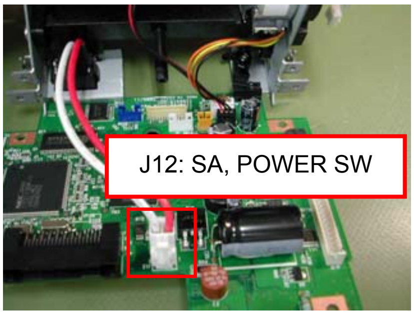




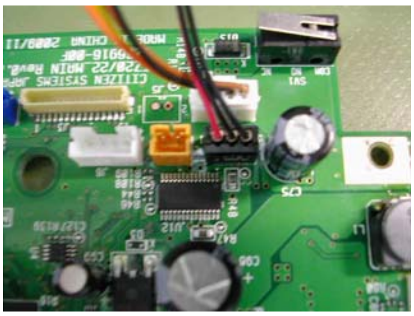
Disconnect the connectors of “SA, HEAD CABLE-02” and “SA, PNE SENSOR” at the left side.

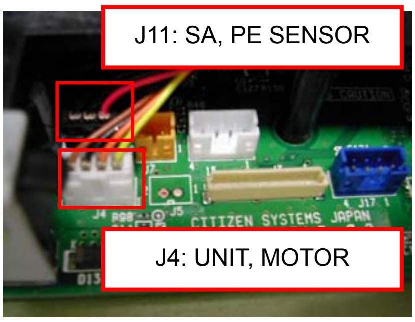


Disconnect the connector of “SA, POWER SW” at the rear.



Disconnect the connectors of “SA, PE SENSOR” and “UNIT, MOTOR” at the front, and remove “UNIT, MAIN PCB”.







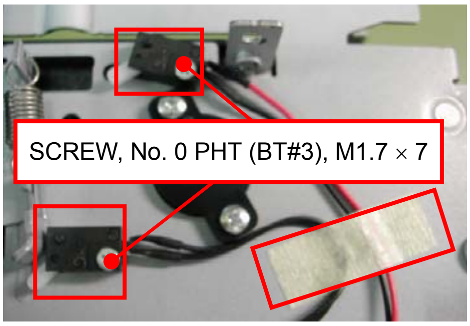
<Precaution at reassembly>

Connectors are provided at the right, left, and front sides. Be careful not to pull these cables by force. When reassembling, be careful not to miss or catch any part, such as “FRAME”. Before disassembling record the cable routing. When reassembling, reconnect the cables correctly. Pass “CABLE” of “COVER OPEN SENSOR” through the hole on “COVER, CABLE PROTECT-02” and secure it.

1-2-2. Disassembling “UNIT, MECHANISM”

1. Disassembling “SA, COVER OPEN SENOR - F”

Remove two “SCREW, No. 0 PHT (BT#3), M1.7 × 7” that fasten “SA, MAIN FRAME” and “SA, COVER OPEN SENSOR” (2 pcs), as well as the tape that secures “CABLE”.



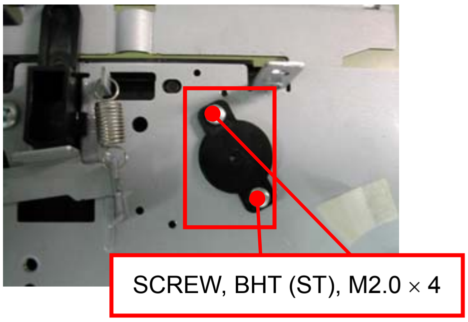
<Precaution at reassembly>

When reassembling, align the “SA, COVER OPEN SENSOR” switch with the hole at “FRAME, MAIN”, and secure it with one screw.

Do not forget to attach a tape to secure the cable.

2. Disassembling “GEAR DAMPER”

Remove two “SCREW, BHT (ST), M2.0 × 4” that fasten “SA, MAIN FRAME” and “GEAR, DAMPER”.



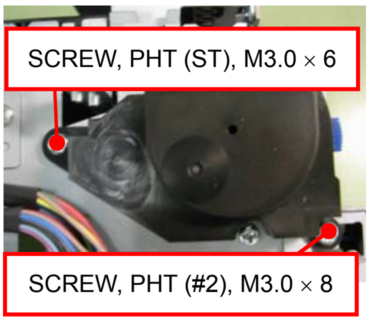
<Precaution at disassembly / reassembly>

The unit can be mounted in either orientation.

This part is not compatible with the one for CT-S801.

3. Disassembling “GEAR REDUCTION”

Remove “SCREW, PHT (#2), M3.0 × 8” and “SCREW, PHT (ST), M3.0 × 6” that fasten “SA, MAIN FRAME” and “COVER, GEAR-02”, and remove “GEAR REDUCTION” from “COVER, GEAR-02”.



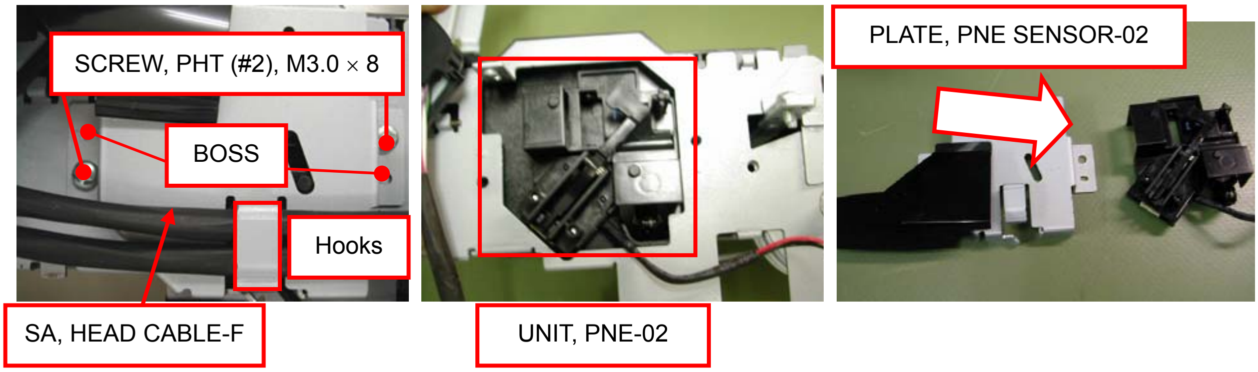


<Precaution at disassembly / reassembly>

If the screws are tightened excessively when reassembling, “COVER, GEAR” will be damaged. Be careful not to tighten them excessively.

4. Disassembling “UNIT, PNE-02”

Remove two “SCREW, PHT (#2), M3.0 × 8” that fasten “SA, MAIN FRAME” and “PLATE, PNE SENSOR-02”, and remove “SA, HEAD CABLE-F” from the hook. Remove “PLATE, PNE SENSOR-02”, and then remove “UNIT, PNE -02”.

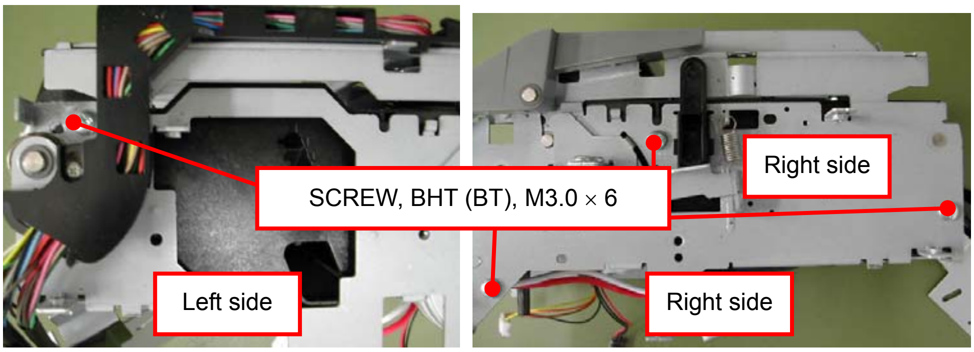


<Precaution at disassembly / reassembly>

Align two holes at “PLATE, PNE SENSOR-02” with the bosses at “SA, MAIN FRAME” and secure them with screws.

5. Disassembling “SA, PAPER HOLDER-02”

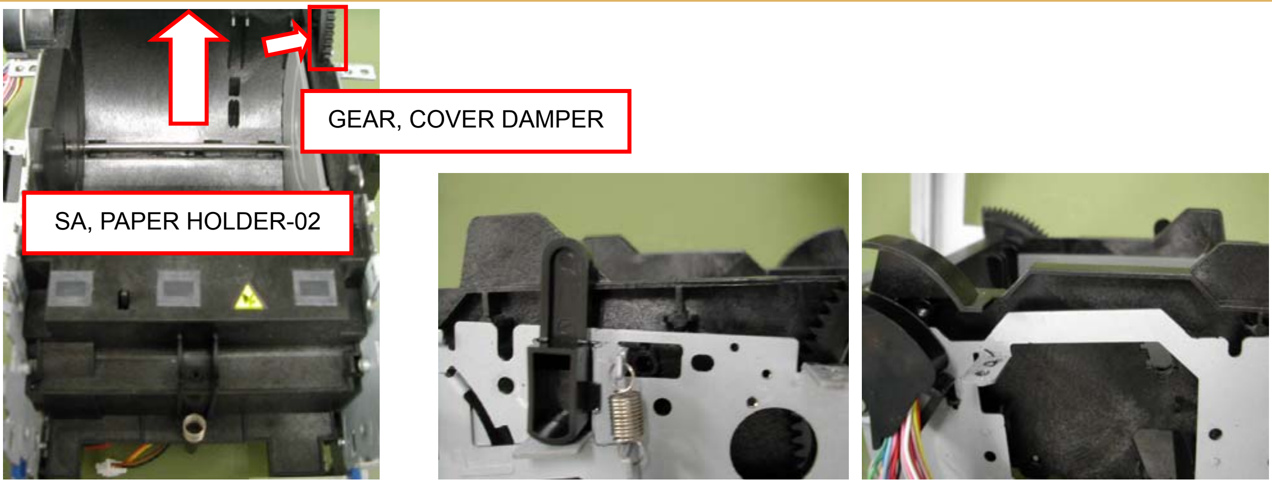
Remove four “SCREW, BHT (BT), M3.0 × 6” that fasten “SA, MAIN FRAME” and “SA, PAPER HOLDER-02”.



<Precaution at disassembly / reassembly>

Remove one screw from the left rear and three screws from the right.

Raise the rear of “SA, PAPER HOLDER-02” while pulling “GEAR, COVER DAMPER” outwardly, and detach the bosses from the slot at “SA, MAIN FRAME”.

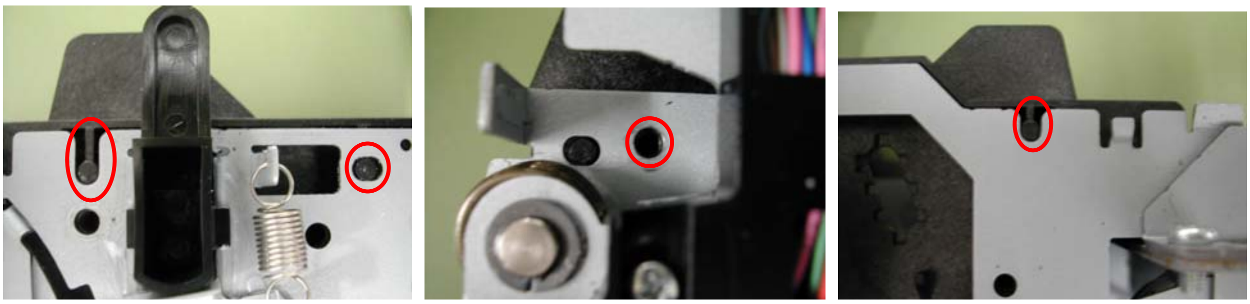


When removing “SA, PAPER HOLDER-02”, pull it upward while keeping it clear of the bosses at “SA, MAIN FRAME” and the bent section at the front.



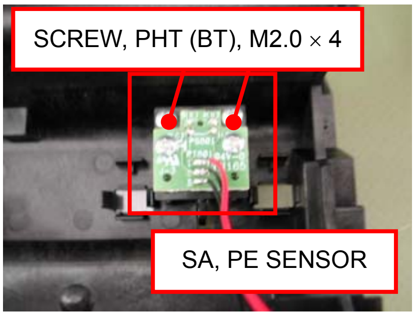
<Precaution at reassembly>

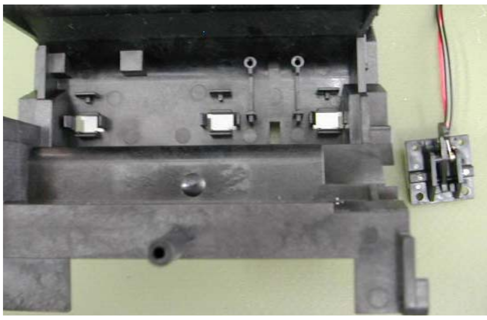
When reassembling, align the bosses at “SA, PAPER HOLDER-02” with the slot at “SA, MAIN FRAME”.



6. Disassembling “SA, PE SENSOR”

Remove two “SCREW, PHT (BT), M2.0 × 6” that fasten “SA, PAPER HOLDER-02” and “SA, PE SENSOR”.





7. Disassembling “SA, FRAME COVER UNIT-02”

Remove “WASHER, PLATEN” that fastens the hinged section at “SA, FRAME MAIN” to “SA, FRAME, COVER” and “GEAR, COVER DAMPER”, and remove “GEAR, COVER DAMPER”.

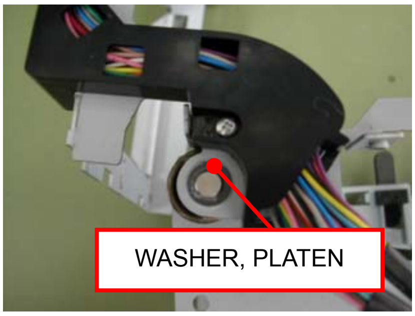




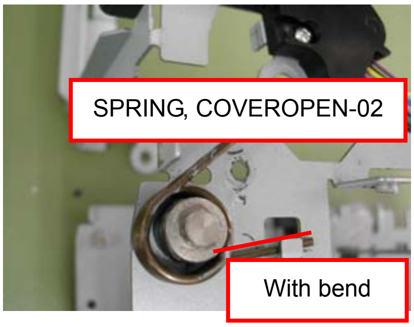
<Precaution at reassembly>

When reassembling, align “GEAR, COVER DAMPER” with the shaft at “FRAME, MAIN” and the boss at “FRAME, COVER”.

Remove “WASHER, PLATEN” from the “COVER, CABLE-02” side, and remove “SA, FRAME COVER UNIT-02” from the hinged section at “SA, MAIN FRAME”. When removing “SA, FRAME COVER UNIT-02”, make sure that “SA, FRAME COVER UNIT-02” is opened and that no load is applied to “SPRING, COVEROPEN-02”.







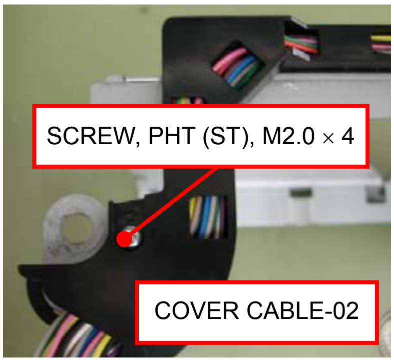


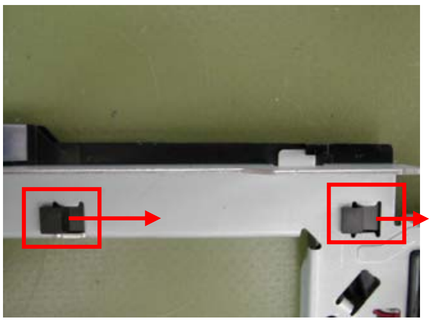
<Precaution at disassembly / reassembly>

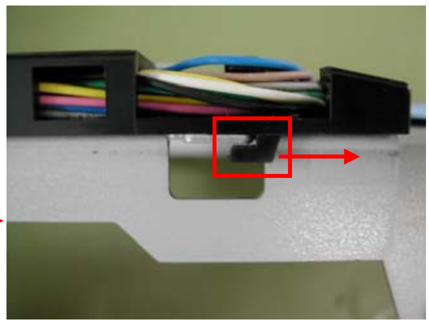
When reassembling, check the orientation of “SPRING, COVEROPEN-02”. Attach the bent side to the hook at the “SA, MAIN FRAME” side, and attach the other side to the hook at the “SA, FRAME COVER UNIT-02” side.

8. Disassembling “COVER, CABLE-02”

Remove “SCREW, PHT (ST), M2.0 × 4” that fastens “SA, FRAME COVER UNIT-02” and “COVER, CABLE-02”, and slide “COVER, CABLE-02” sideways to detach the hooks. Then pull out “COVER, CABLE-02”.

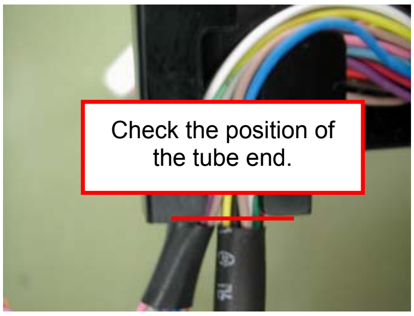


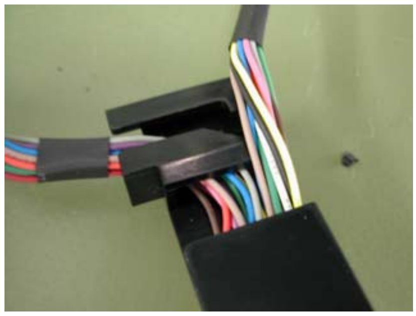


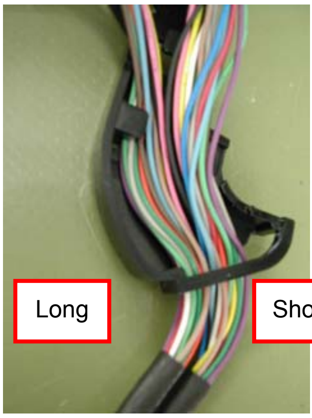


Remove “SA, HEAD CABLE-02” from “COVER, CABLE-02”.



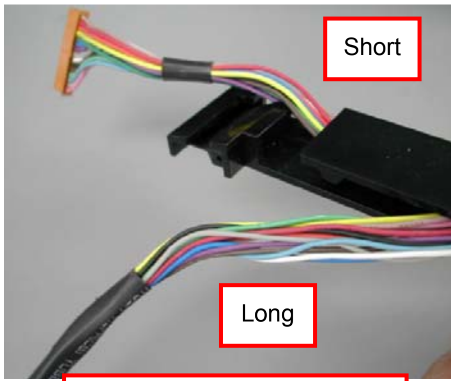








Insert long cables first and short ones next.



Top of “COVER, CABLE-02”

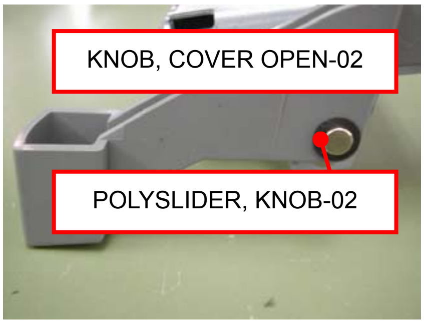
<Precaution at reassembly>

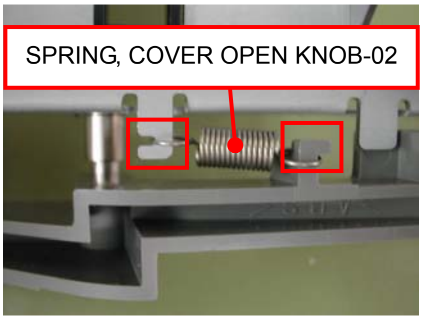
When reassembling, insert long cables into the left side of “SA, HEAD CABLE-02” at first, and then short ones into the right side.

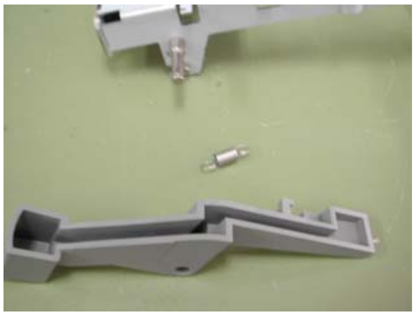
Insert “CABLE” into the inside under the hooks. At the top of “COVER, CABLE-02”, route the short cables to the back and long ones to the front. Adjust the length of the tube to align its end with the edge at “COVER, CABLE-02”.

9. Disassembling “KNOB, COVER OPEN-02”

Remove “POLYSLIDER, KNOB-02” that fastens “SA, FRAME COVER UNIT-02” and “KNOB, COVER OPEN-02”, pull “KNOB, COVER OPEN-02” out from the shaft, and detach “SPRING, COVER OPEN KNOB-02” from “SA, FRAME COVER UNIT-02”.





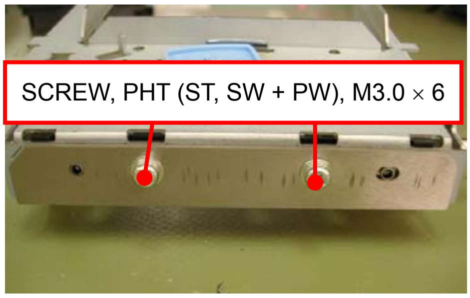


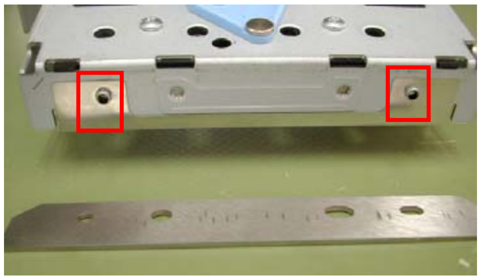
<Precaution at reassembly>

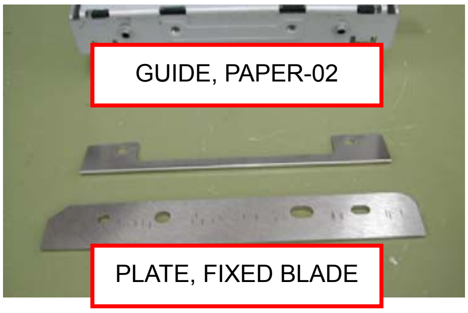
When reassembling, attach the spring to the hooks and insert it into the shaft at “SA, FRAME COVER UNIT-02”.

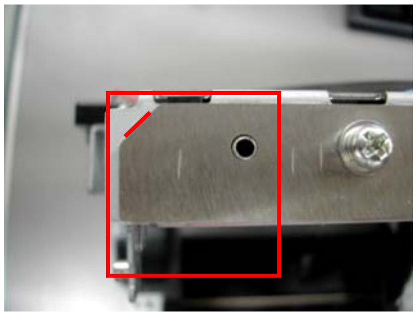
10. Disassembling "PLATE, FIX BLADE"

Remove two "SCREW, PHT (ST, SW + PW), M3.0 × 6" that fasten "FRAME COVER UNIT-02", "PLATE, FIXED BLADE" and "GUIDE, PAPER-02".









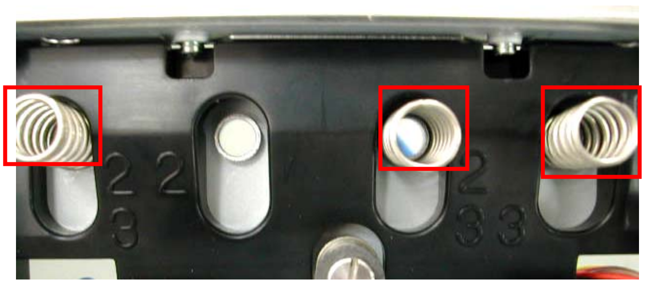
<Precaution at reassembly>

When reassembling, align "GUIDE, PAPE-02" with the boss at "SA, FRAME COVER UNIT-02".

Keep the chamfered side of "PLATE, FIXED BLADE" at the left so that the alignment mark at "SA, FRAME COVER UNIT-0" can be seen.

11. Disassembling "GUIDE, HEAD HOLDER-02"

Remove three "SPRING, HEAD-02" from "SA, FRAME COVER UNIT-02".



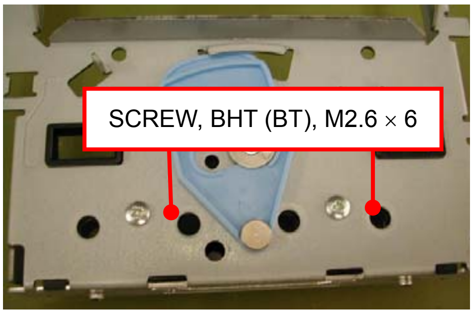
<Precaution at disassembly / reassembly>

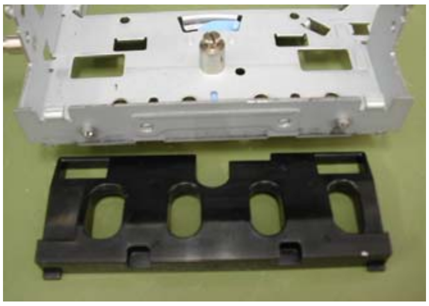
The photo shows the position for the 3-inch model.

"2" marked on "GUIDE, HEAD HOLDER" indicates the position for the 2-inch model, and "3" indicates the one for the 3-inch model.

Insert the spring into the boss at "SA, FRAME COVER UNIT-02" and check that the spring cannot be removed even if it is pulled lightly.

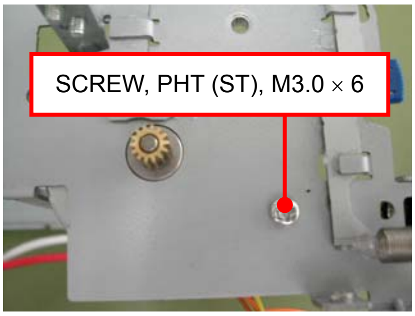
Remove two “SCREW, BHT (BT), M2.6 × 6” that fasten “SA, FRAME COVER UNIT-02” and “GUIDE, HEAD HOLDER-02”.





12. Disassembling “UNIT, MOTOR”

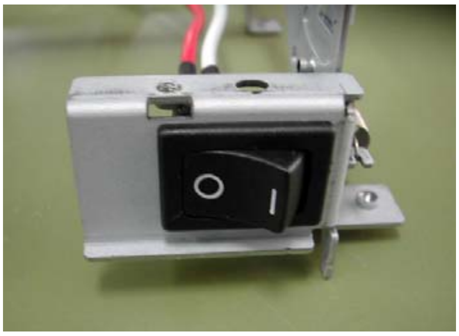
Remove “SCREW, PHT (ST), M3.0 × 6” that fastens “SA, MAIN FRAME” and “UNIT, MOTOR”.

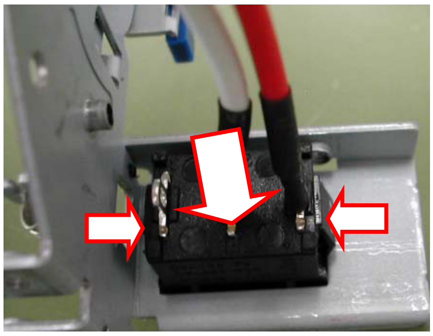




13. Disassembling “SA, POWER SW”

Pull “SA, POWER SW”, attached to “SA, MAIN FRAME”, toward the front while squeezing the right and left sides of “SA, POWER SW”.





<Precaution at reassembly>

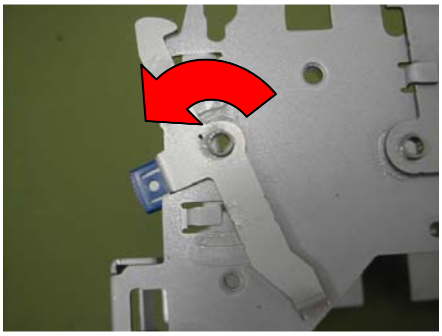
When reassembling, check the orientation of the switch.

“ON” (|) must be located in the right with “OFF” (O) in the left.

14. Disassembling “LEVER R & L, CUTTER RELEASE-02”

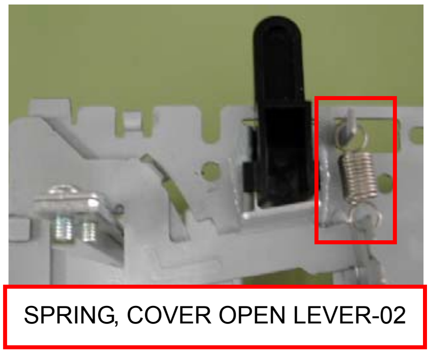
Detach “SPRING, LEVER CUTTER-02” from the hooks at “SA, FRAME MAIN” and “LEVER R, CUTTER RELEASE-02”. Turn “LEVER R, CUTTER RELEASE -02” toward you and remove it from the shaft at “SA, FRAME MAIN”. Remove “LEVER L, CUTTER RELEASE-02” in the same way.

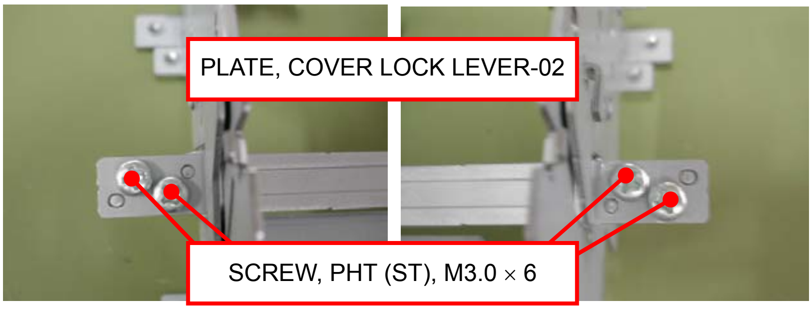




15. Disassembling “PLATE, COVER LOCK LEVER-02”

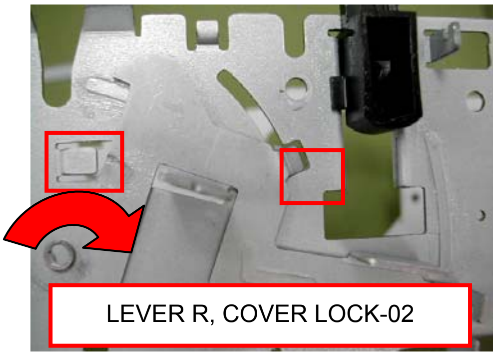
Remove “SPRING, COVER OPEN LEVER-02” from the hooks at “LEVER R, COVER LOCK-02” and “SA, MAIN FRAME”. Remove four “SCREW, PHT (ST), M3.0 × 6” that fasten “LEVER, R & L COVER LOCK-02” and “PLATE, COVER LOCK LEVER-02”.





16. Disassembling “LEVER R & L COVER LOCK-02”

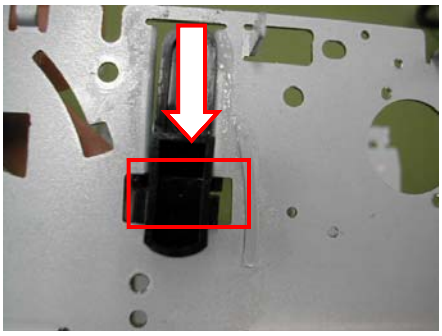
Turn “LEVER R, COVER LOCK-02” until the hook is aligned with the hole at “SA, FRAME MAIN”, and remove “LEVER R, COVER LOCK-02” along the hole. Remove “LEVER L, COVER LOCK-02” in the same way.





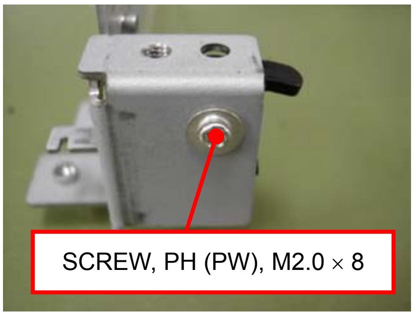
17. Disassembling “LEVER, COVER OPEN-02”

Press down “LEVER, COVER OPEN-02”, align it with the slot at “SA, MAIN FRAME”, and pull it out toward you.

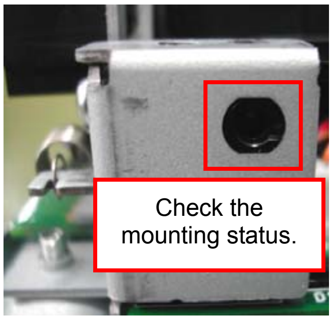


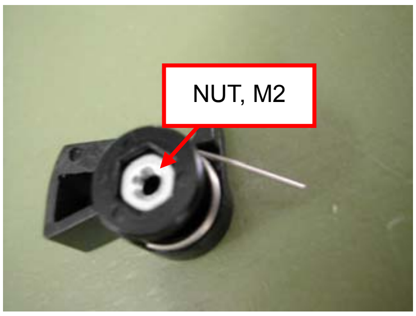
18. Disassembling “LEVER, INTERLOCK SENSOR-02”

Remove “SCREW, PH (PW), M2.0 × 8” that fastens “LEVER, INTERLOCK SENSOR-02” and “SA, MAIN FRAME”.











<Precaution at disassembly / reassembly>

The screw is locked with “NUT, M2”. Be careful not to loose it.

The shaft of “SHAFT, INTERLOCK SENSOR” is specially shaped to prevent it from rotating. When reassembling, align “SHAFT, INTERLOCK SENSOR” with the hole at “SA, FRAME, MAIN”.

Check the orientation of “SPRING INTERLOCK-02” and the mounting position of “SA, MAIN FRAME”.

1-3. Assembly Procedure

When reassembling the parts, follow the procedure of “1-2 Disassembly Procedure” in reverse.

1-4. Oiling

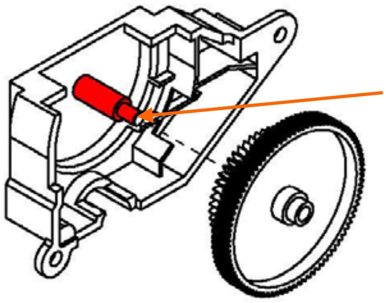
1) Oil Used (Grease)

- FLOIL G311S (Kanto Kasei)
- Daphne Eponex Grease No. 2 (Idemitsu)

2) Oiling Positions

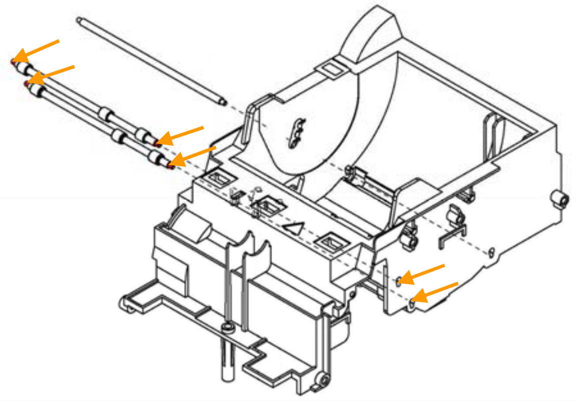
<FLOIL G311S>

(1) Shaft at “COVER GEAR”

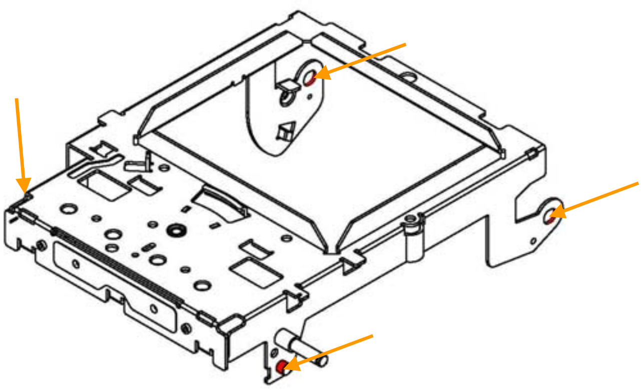


(2) Shafts at “SHAFT, PAPER HOLDER” (4 positions)

* Apply oil to the “HOLDER PAPER” side.



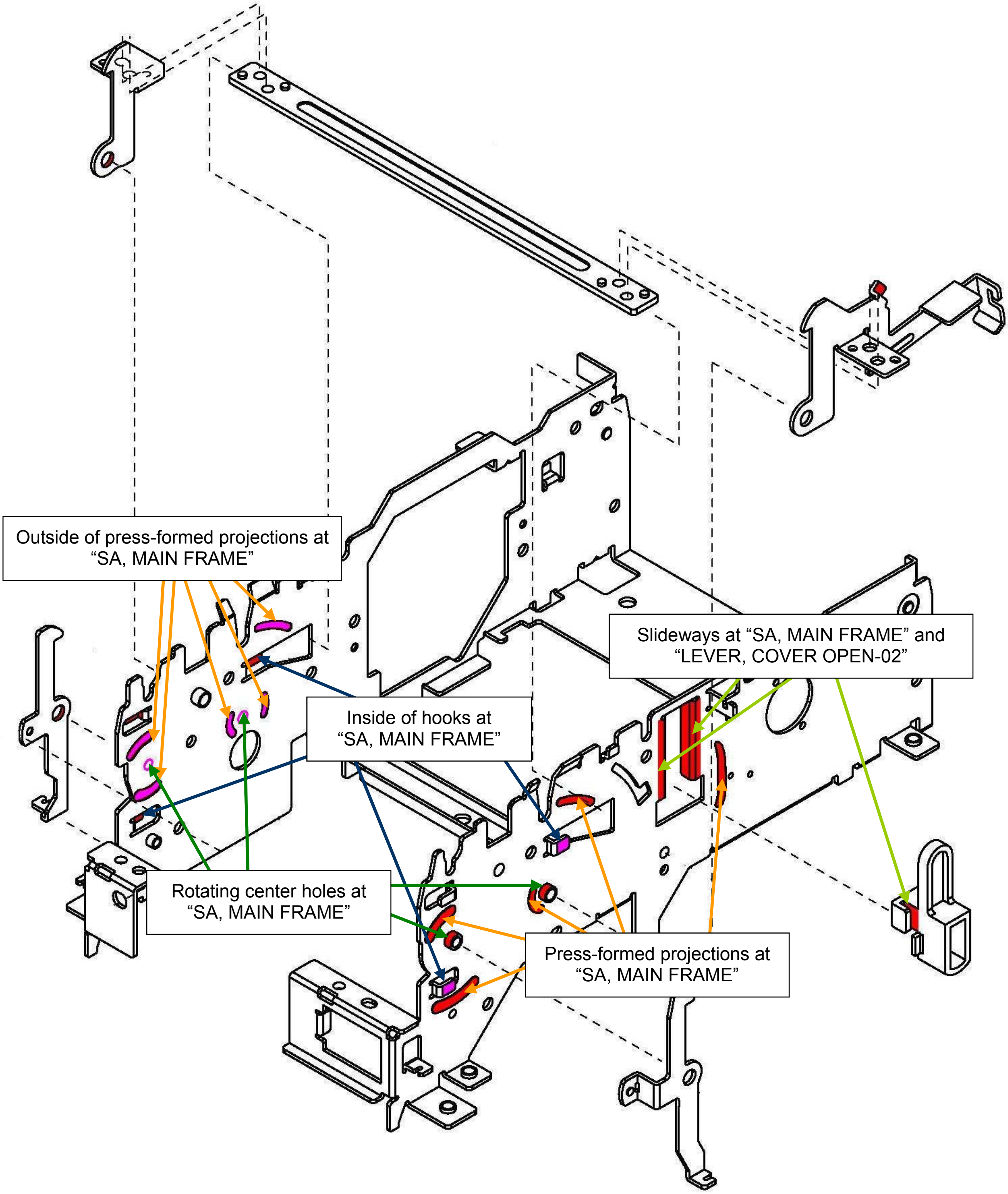
(3) Hinge holes at “SA, COVER FRAME”, mating section with “LEVER R, L COVER LOCK” (two positions at the right and left)



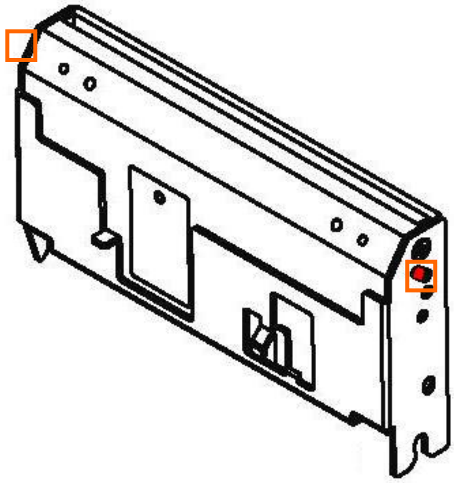
(4) Rotating center holes, press-formed projections and hooks at “LEVER R & L, CUTTER RELEASE-02” and “SA, MAIN FRAME”

Rotating center holes, press-formed projections and hooks at “LEVER R & L, COVER LOCK-02” and “SA, MAIN FRAME”

Slideways at “LEVER, COVER OPEN-02” and “SA, MAIN FRAME”



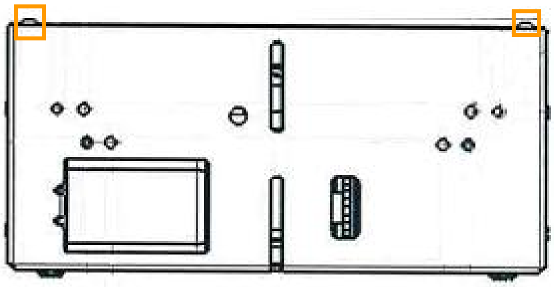
(5) Both ends of the shaft at “SA CUTTER UNIT”



<Daphne Eponex Grease No. 2>

Right/left cutting edges of the blade at “SA, CUTTER UNIT”

Daphne Eponex Grease No. 2



2. TROUBLESHOOTING

2-1. Error Indication

When an error state is detected it is indicated at the LCD, LCD backlight, LED, and buzzer.

The LCD display shows the error type in the upper half and the action to take in the lower half. If the message contains more than 16 characters, scroll the display.

Status	Message	LED	LCD Backlight	Buzzer Tone *1
Paper near end	PAPER LOW	Orange	White	None
Paper end	Paper end Please replace paper roll.	Red	Red	Provided
Front cover open	Front cover open Please close front cover.	Red	White	Provided
Paper cover open	Paper cover open Please close paper cover.	Red	White	Provided
Cutter error	Cutter lock Open paper cover & remove jam.	Red	Red	Provided
	Cutter lock Then close the cover.	Red	Red	Provided
Black mark error	Black Mark Error Please check the paper.	Red	Red	Provided
Print head hot	Head overheat Please wait, will continue.	Orange	White	None
Memory error	Memory Error	Red	Red	Provided
Print head error	Head Error Please contact your dealer.	Red	Red	Provided
Motor error	Motor Error Please contact your dealer.	Red	Red	Provided
Low voltage error	L Voltage Error Please contact your dealer.	Red	Red	Provided
High voltage error	H Voltage Error Please contact your dealer.	Red	Red	Provided
Drawer voltage error	Drawer Error Please contact your dealer.	Red	Red	Provided
Macro execution wait *2	–	–	–	–

*1: A buzzer beeps when MSW5-1 (buzzer setting) is ON.

*2: The LED may light during the macro execution.

2-2. Explanations of Error Conditions

2-2-1. Paper Near End

When the diameter of the roll paper becomes small (less than 23 to 31 mm in diameter), the paper near-end sensor activates and indicates that the roll paper is running short. This message warns that the remaining paper is short. Printing can be continued until the paper runs out.

2-2-2. Paper End

When the roll paper has run out, the paper sensor in the paper path detects the end of paper near the print head and stops the printing motion. Refill the paper to cancel the error.

2-2-3. Front Cover Open

The front cover is not closed. Printing is not possible in this condition.

Close the cover to cancel the error.

2-2-4. Paper Cover Open

The paper cover is not closed. Printing is not possible in this condition.

Close the cover to cancel the error.

Depending on the memory switch setting, a command must be issued to resume printing.

2-2-5. Cutter Error

The auto cutter stops operating due to paper jams or the like. In this case, refer to "10.5 Canceling the Cutter Lock Error" and cancel the error. When you open the paper cover to clear paper jams, the message "Close the paper cover." will be displayed.

2-2-6. Black Mark Error

Black marks cannot be detected because of insufficient luminescence of the sensor or poor sensitivity.

Calibrate the black mark sensor again with the paper to be used.

2-2-7. Print Head Hot

When you print data with high density setting, print dense images, or continue printing in a hot environment, the print head temperature may rise and if it exceeds 65°C, printing will stop. When the print head is cooled to 60°C or lower, printing will be resumed.

2-2-8. Memory Error

A memory error has occurred.

2-2-9. Print Head Error

If abnormal heat generation is detected at the print head for any reason, the print head drive power and the paper feed motor drive power are shut down. In this case, shut down the printer immediately.

2-2-10. Motor Error

If you print continuously or feed paper continuously, the paper feed motor temperature will rise. If it exceeds 80°C, printing or paper feed will stop. When it is cooled to 70°C or lower, the error will automatically be reset.

However, the standard model is not equipped with a thermistor as well as such temperature control because no heat generation exceeding 80°C as well as no smoking or ignition was observed with continuous printing or paper feed at the fault test.

2-2-11. Low Voltage Error

If the power supplied to the printer drops to 16 V or below, operation will stop. In this case, shut down the printer immediately.

2-2-12. High Voltage Error

If the power supplied to the printer becomes 27 V or above, operation will stop. In this case, shut down the printer immediately.

2-2-13. Drawer Voltage Error

If the cash drawer drive power is overloaded by any reason (cash drawer fault, connection of external device other than cash drawer, contamination, etc.) an error will be detected and the cash drawer drive power will be shut down. In this case, shut down the printer immediately.

2-2-14. Macro Execution Wait

When the ESC/POS command is specified, the macro execution wait state will take effect. The macro will be executed when the switch is pressed or when a specified time has elapsed.

2-3. Troubleshooting Procedure

When a fault occurs, confirm its phenomenon, locate the problem in accordance with “2.2 Troubleshooting Guide”, and troubleshoot it as described below.

Phenomenon	Find the fault phenomenon in this column. If there are multiple phenomena, take all the applicable items into consideration. This will help you locate hidden problems as well.
Cause	Possible causes are listed here. Find probable causes from the list and follow the check method to identify the cause of the fault.
Check Method	The check method for identifying the cause of the fault is described.
Remedies	Take the remedies described in this column.

By following the above-mentioned procedure, you can troubleshoot problems efficiently with fewer misjudgments.

2-4. Troubleshooting Guide

● Power Supply Failure

Phenomenon	Cause	Check Method	Remedies
Power cannot be turned on. (The POWER LED not illuminated.)	The power cable is not connected.	–	Connect the power cable.
	The fuse is blown.	Check if the specified fuse is used.	Use the specified fuse.
The fuse is blown soon if it is replaced with a new one.	The control PCB is faulty.	–	Replace “SA, MAIN PCB”.
	The circuit drive power is abnormal.	Use a tester and measure the circuit drive voltage.	Replace the control PCB.

* If the fuse is blown with the specified AC adapter used, the thermal head or control PCB may be defective. Replace the defective part with a new one. Check wiring of the interface cable.

- Printing Failure

Phenomenon	Cause	Check Method	Remedies
No printing	The control PCB is faulty.	–	Replace the control PCB.
	The thermal head connector has a bad contact or connection.	Check the contact or connecting condition.	Re-insert the thermal head connector or replace it with a new one.
	The thermal head is faulty.	–	Replace the thermal head with a new one.
Part of printing is not done.	The thermal head connector has a bad contact or connection or faulty mounting.	Check the contact, connecting or mounting condition.	Re-insert the thermal head connector or “HEAD SA”.
	The thermal head is faulty.	–	Replace the thermal head with a new one.
Print is pale. Print is uneven. Print is faint.	The supply voltage is low.	Check the supply voltage with a tester.	Use the printer within the specified supply voltage range.
	The thermal head is faulty.	–	Replace the thermal head with a new one.
	The thermal head has fouling.	Check the thermal head for fouling.	Remove fouling using ethyl alcohol soaked cotton swab or soft cloth.
	Paper other than recommended is used.	Check if the paper being used meets the specification.	Replace it with the specified paper.
	The platen roller is not mounted correctly.	Check the mounting condition of the platen roller.	Mount the platen roller correctly.
	The paper thickness setting lever is not set correctly.	Check if the paper thickness setting is correct for the actual paper thickness.	Set the lever in the correct position.

● Paper Feed Failure

Phenomenon	Cause	Check Method	Remedies
Paper is not fed. Paper feed is not straight.	The motor connector has a bad connection.	Check the connecting condition of the connector.	Connect the connector correctly.
	The motor is faulty.	Measure the supply voltage with a tester or oscilloscope.	Replace "UNIT, MOTOR".
	The supply voltage is low.	Check the supply voltage with a tester.	Use the printer within the specified supply voltage range.
	The control PCB is faulty.	–	Replace the control PCB.
	The platen roller is not mounted correctly.	Check the mounting condition of the platen roller.	Mount the platen roller correctly.
	Paper feed is faulty.	Check if paper is jammed, torn or caught in the paper path.	Remove unnecessary paper and set the paper correctly.
	Foreign substances are stuck in the gear. A gear is broken.	Remove the gear holder and check the gear for any foreign substance or breakage.	Eliminate foreign substance. If any gear is broken, replace it with a new one.

● Faulty Sensor

Phenomenon	Cause	Check Method	Remedies
Paper presence or absence cannot be detected. Paper near end cannot be detected.	The paper sensor is faulty.	Check the indication at the LCD, LED or buzzer when the paper ends.	Replace "UNIT, PE".
	The paper near end sensor is faulty.		Replace "UNIT, PNE".
	The sensor spring is broken.	Push the sensor by hand and check if it returns.	Replace "UNIT, PE" or "UNIT, PNE".
The cover or front cover open state is not detected or remains in the detected state.	The connector has a bad connection. The sensor is faulty.	Check the connecting condition of the connector. Check the indication at the LCD, LED or buzzer while opening and closing the cover.	Connect the connector correctly.
	The sensor lever spring is broken.	Check the indication at the LCD, LED or buzzer while opening and closing the front cover.	Replace "SPRING INTERLOCK".

● Auto Cutter Failure

Phenomenon	Cause	Check Method	Remedies
The auto cutter does not operate.	The connector has a bad connection.	Check the connecting condition of the connector.	Connect the connector correctly.
	The auto cutter is faulty.	Measure the supply voltage with a tester or oscilloscope.	If the supply voltage is normal, replace the auto cutter with a new one.
	Paper feed is faulty. (paper jams)	Check if paper is jammed, torn or caught in the paper path.	Remove unnecessary paper and set the paper correctly.

- Operation Panel Display Failure

Phenomenon	Cause	Check Method	Remedies
Indications at the LED and LCD on the operation panel are faulty.	The connector has a bad connection or cable disconnection.	Check the connecting condition of the connector. Check the cable surface.	Connect the connector correctly. Replace “SA, OP-PANEL CABLE”.
	The LCD is broken or the backlight is faulty.	There are some dead or stuck pixels on the LCD. The backlight is not lit or cannot be switched.	Replace “UNIT, OP-PANEL PCB”.

3. SERVICE PARTS LIST

Remarks: All the parts used in the product are contained in “SERVICE PARTS LIST” in this Service Manual. However, note that all of them are not available with customers.

When placing an order for service parts, refer to the Parts Price List published separately. If you need the Parts Price List, consult the local distributor from whom you purchased this product.

3-1. Mechanical Parts List

No.	Part No.	Part Name	Q’ty	Remarks
1	TZ99803-0	UNIT, MECHANISM-02	1	Not supplied
2	TZ44701-0	SA, MAIN, FRAME-02	1	
3	TZ44212-0	COVER, CABLE PROTECT-02	1	
4	E14030-060F	SCREW, BHT (ST), M3.0 × 6	1	
5	TZ44126-0	LEVER L, CUTTER RELEASE-02	1	
6	TZ44127-0	LEVER R, CUTTER RELEASE-02	1	
7	TZ44205-0	COVER, CUTTER LEVER	2	
8	TZ23620-0	SPRING, LEVER CUTTER-02	2	
9	TZ44218-0	LEVER, INTERLOCK SENSOR-02	1	
10	TZ42201-0	SHAFT, INTERLOCK SENSOR	1	
11	E00620-080F	SCREW, PH (PW), M2.0 × 8	1	
12	E40120-000F	NUT, M2	1	
13	TZ23623-0	SPRING, INTERLOCK-02	1	
14	TZ44120-0	PLATE, COVER LOOK LEVER-02	1	
15	TZ44124-0	LEVER L, COVER LOCK-02	1	
16	TZ44125-0	LEVER R, COVER LOCK-02	1	
17	E11130-060F	SCREW, PHT (ST), M3.0 × 6	4	
18	TZ23619-0	SPRING, COVER OPEN LEVER-02	1	
19	TZ25801-0	UNIT, MOTOR	1	
20	TZ20202-0	GEAR, REDUCTION	1	
21	TZ24220-0	COVER, GEAR-02	1	
22	E00130-060F	SCREW, PHT (ST), M3.0 × 6	2	
23	TZ44221-0	LEVER, COVER OPEN-02	1	
24	TZ49702-0	SA, COVER FRAME UNIT-02	1	
25	TZ44702-0	SA, COVER FRAME-02	1	
26	TZ04202-0	LEVER, ADJUST HEAD-02	1	
27	TZ02003-0	SHAFT, HEAD ADJUST LEVER-02	1	
28	TZ04106-0	PLATE, HEAD ADJUST-02	1	
29	E00920-050F	SCREW, PH (SW + PW), M2.0 × 5	1	
30	TZ44223-0	GUIDE, HEAD HOLDER-02	1	
31	E17926-060F	SCREW, BHT (BT), M2.6 × 6	2	
32	TZ02004-0	SHAFT, HEAD ADJUST-02	1	
33	TZ23625-0	SPRING, HEAD ADJUST-02	1	
34	TZ04107-0	POLYSLIDER, HEAD ADJUST-02	1	
35	TZ09804-0	SA, THERMAL HEAD-02	1	
36	TZ67716-0	SA, HEAD CABLE (FRONT)	1	
37	TZ68714-0	SA, LABEL SENSOR-F	1	For label model

No.	Part No.	Part Name	Q'ty	Remarks
38	TZ68712-0	SA, BM SENSOR-F	1	For BM model
39	TZ66713-0	SA, LABEL SENSOR-2F	1	For label model (one side only)
40	TZ29701-0	SA, HEAD COVER-02	1	
41	TZ24221-0	COVER, HEAD-02	1	
42	TZ24226-0	SHAFT, DAMPER-02	2	
43	TZ24223-0	HOLDER, DAMPER PAPER-02	1	
44	TZ22202-0	DAMPER, PAPER	1	
45	TZ24228-0	SUPPORT, DAMPER SPRING-02	1	
46	TZ23616-0	SPRING, DAMPER-02	1	
47	E18117-040F	SCREW, No. 0 PH (BT2.5 × 0.5) M1.7 × 4	2	
48	TZ99913-0	LABEL, HEAT CAUTION-02	1	
49-1	TZ44133-0	SHEET, SENSOR COVER-02	1	
49-2	TZ44137-0	SHEET, SENSOR COVER (LABEL)-02	1	
50	TZ24108-0	GUIDE, PAPER-02	1	
51-1	TZ99101-0	PLATE, FIX BLADE	1	For 3-inch model
51-2	TZ99102-0	PLATE, FIX BLADE	1	For 2-inch model
52	E16930-060F	SCREW, PHT (ST, SW + PW), M3.0 × 6	2	
53	TZ44217-0	KNOB, COVER OPEN-02	1	
54	TZ44130-0	POLYSLIDER, KNOB-02	1	
55	TZ23618-0	SPRING, COVER OPEN KNOB-02	1	
56	TZ44214-0	COVER, CABLE-02	1	
57	E14020-040F	SCREW, PHT (ST), M2.0 × 4	1	
58	TZ40201-0	GEAR, COVER DAMPER	1	
59	TZ23615-0	SPRING, HEAD-02	3	
60	TZ40901-0	GEAR, DAMPER C	1	
61	E14020-040F	SCREW, BHT (ST), M2.0 × 4	2	
62	TZ68710-0	SA,COVER OPEN SENSOR-F	1	
63	E13517-070F	SCREW, No. 0, PHT (BT#3), M1.7 × 7	2	
64	TZ49701-0	SA, PAPER HOLDER-02	1	
65	TZ44216-0	HOLDER, PAPER-02	1	
66	TZ22201-0	ROLLER, PAPER	6	
67	TZ22001-0	SHAFT, PAPER HOLDER	3	
68	TZ99914-0	LABEL, EDGE CAUTION-02	1	
69-1	TZ44131-0	SHEET, SENSOR MAIN-02	3	
69-2	TZ44136-0	SHEET, SENSOR MAIN (LABEL)-02	1	
70	E17930-060F	SCREW, BHT (BT), M3.0 × 6	3	
71	E18330-080F	SCREW, BHT (BT, PW), M3.0 × 8	1	
72	TZ44804-0	UNIT, PNE-02	1	
73	TZ24206-0	BASE, PNE UNIT	1	
74	TZ24207-0	LEVER, PNE UNIT	1	
75	TZ24208-0	BASE, PNE SENSOR	1	
76	TZ24209-0	LEVER, PNE SENSOR	1	
77	TZ24210-0	SWITCH, PNE UNIT	1	
78	TZ24212-0	SUPPORT, LEVER PNE	1	
79	TZ23607-0	SPRING, PNE SENSOR	1	
80	TZ23608-0	SPRING, PNE UNIT	1	
81	TZ23609-0	SPRING, SUPPORT PNE	1	
82	TZ23613-0	SPRING, SWITCH PNE	1	

No.	Part No.	Part Name	Q'ty	Remarks
83	E10120-080F	SCREW, BHT (PT) M2.0 × 8	2	
84	TZ68711-0	SA,PNE SENSOR-F	1	
85	TZ24106-0	PLATE, PNE SENSOR-02	1	
86	E10130-080F	SCREW, PHT (#2), M3.0 × 8	3	
87	TZ44803-0	UNIT, PE-02	1	
88	TZ24218-0	BASE, PE SENSOR-02	1	Not supplied
89	TZ24205-0	LEVER, PE SENSOR	1	Not supplied
90	TZ23606-0	SPRING, PE SENSOR	1	Not supplied
91	TZ68703-0	SA,PE SENSOR	1	Not supplied
92	E12820-060F	SCREW, BHT (PT) M2.0 × 6	2	Not supplied
93	E12820-060F	SCREW, BHT (PT) M2.0 × 6	2	
94	TZ44219-0	PARTITION, PAPER-02	1	
95	TZ44116-0	WASHER, PLATEN	2	
96	TZ68701-0	SA, POWER SW	1	
97-1	TZ66707-0	SA, MAIN PCB (851 ENG)	1	
97-2	TZ66708-0	SA, MAIN PCB (851 JPN)	1	
97-3	TZ66709-0	SA, MAIN PCB (851 CHN)	1	
97-4	TZ66728-0	SA, MAIN PCB (851 AUS)	1	
98	E14030-060F	SCREW, BHT (ST), M3.0 × 6	4	
99	TZ44102-0	FRAME, BOTTOM	1	
100	E14030-060F	SCREW, BHT (ST), M3.0 × 6	4	
101	BE54106-0	LEG	4	
102	TZ23624-0	SPRING, CUTTER POPUP-02	1	
103-1	TZ29702-0	SA, PLATEN UNIT-02	1	For 3-inch model
103-2	TZ29703-0	SA, PLATEN UNIT (2INCH)-02	1	For 2-inch model
104-1	TZ28501-1	SA, PLATEN	1	For 3-inch model
104-2	TZ28502-1	SA, PLATEN (2INCH)	1	For 2-inch model
105	TZ24222-0	COVER, PLATEN-02	1	
106	TZ24224-0	HANDLE, PLATEN-02	2	
107	TZ04105-0	PLATE, PLATEN-02	2	
108	E18220-050F	SCREW, No. 0 TFH (ST4 × 0.5) M2.0 × 5	4	
109	TZ21402-0	BUSHING, PLATEN-02	2	
110	E60340-000F	E-RING, 4.0	2	
111	TZ20201-0	GEAR, PLATEN	1	
112	TZ44116-0	WASHER, PLATEN	1	
113	TZ99702-0	SA, CUTTER UNIT-02	1	
114	TZ44703-0	SA, CUTTER UNIT FRAME-02	1	
115	E03920-030WF	SCREW, No. 0, TFH, M2 × 3 (NI)	2	
116	TZ98902-0	UNIT, SLIDE BLADE	1	
117	TZ24104-0	SHEET, CUTTER UNIT	1	
118	TZ44135-0	SHEET, CABLE PROTECT-02	1	
119	TZ67710-0	SA,CUTTER CABLE	1	
120-1	TZ59703-0	SA, FRONT COVER-02	(1)	White
120-2	TZ59704-0	SA, FRONT COVER	(1)	Black
121-1	TZ56225-0	COVER, FRONT	(1)	White
121-2	TZ56226-0 (BK)	COVER, FRONT BK-02	(1)	Black
122	TZ44220-0	PIN, FRONT COVER-02	1	
123	TZ23622-0	SPRING R, FRONT COVER-02	1	

No.	Part No.	Part Name	Q'ty	Remarks
124	TZ66810-0	UNIT, OPEPANE PCB-851	1	
125	E12820-060F	SCREW, BHT (PT) M2.0 × 6	3	
126	TZ44132-0	SHEET, LCD-02	1	
127	TZ56227-0	COVER, LCD-02	1	
128	TZ44208-0	KEY, OPE-PANE	4	
129	TZ44211-0	KEY, OPE-PANE FEED-02	1	
130	TZ54108-0	SHEET, OPE-PANE FEED -02	1	
131	TZ54109-0	SHEET, OPE-PANE (BLACK)-02	1	
132	TZ67718-0	SA, OPEPANE CABLE-F	1	
133	TZ44222-0	HOLDER, FRONT COVER-02	1	
134	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
135-1	TZ56221-0	CASE-02	(1)	White
135-2	TZ56222-0 (BK)	CASE BK-02	(1)	Black
136	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
137	TZ24225-0	PIN, FRONT COVER L-02	1	
138	TZ23621-0	SPRING L, FRONT COVER-02	1	
139-1	TZ56206-1	COVER, POWER SWITCH	(1)	White
139-2	TZ56214-1	COVER, POWER SWITCH BK	(1)	Black
140-1	TZ56223-0	COVER-02	(1)	White
140-2	TZ56214-0 (BK)	COVER BK-02	(1)	Black
141	TZ24107-0	CUTTER, MANUAL-02	1	
142	E12830-100F	SCREW, BHT (PT), M3.0 × 10	3	
143-1	TA69905-1	SWITCHING ADAPTER (36AD3)	1	
143-2	TA69904-1	SWITCHING ADAPTER (36AD2)	1	
144-1	TZ56207-0	COVER, ADAPTER	(1)	White
144-2	TZ56215-0 (BK)	COVER, ADAPTER BK	(1)	Black
145	BE54106-0	LEG	4	
146	E14030-060F	SCREW, BHT (ST), M3.0 × 6	4	
147	TZ66801-0	UNIT, SERIAL I/F PCB (inch)	1	Option
148	TZ66712-0	SA, SERIAL I/F PCB	1	
149	TA54103-0	PLATE_SERIAL_I_F	1	
150	C6390-054#	LOCK SCREW (INCH)	2	
151	E11130-060F	SCREW, BHT (ST), M3.0 × 6	2	
152	TZ66808-0	UNIT, SERIAL I/F PCB (mm)	1	Option
153	TZ66712-0	SA, SERIAL I/F PCB	1	
154	TA54103-0	PLATE_SERIAL_I_F	1	
155	C6390-055#	LOCK SCREW (M2.6)	2	
156	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
157	TZ66803-0	UNIT, USB PCB I/F	1	Option
158	TZ66714-0	SA, USB I/F PCB	1	
159	TA54104-0	PLATE_USB_I_F	1	
160	E14030-040F	SCREW, BHT (ST), M3.0 × 4	2	
161	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
162	TZ59901-0	LWS-1S (CABLE, CLAMP)	1	
163	TZ66802-0	UNIT, PARALLEL I/F	1	Option
164	TZ66713-0	SA, PARALLEL I/F PCB	1	
165	TA54102-0	PLATE_PARALLEL_I_F	1	
166	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	

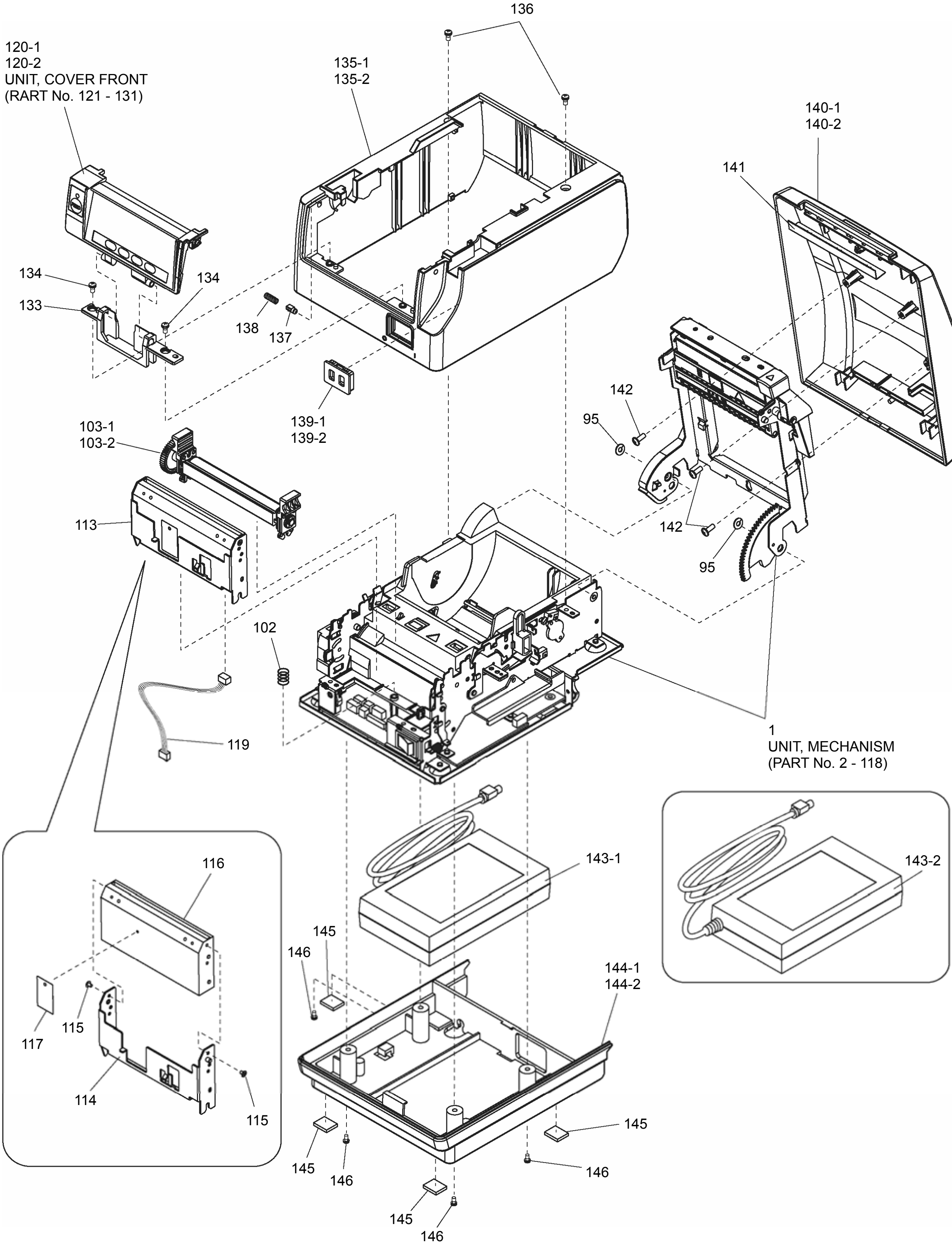
No.	Part No.	Part Name	Q'ty	Remarks
167	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
168	TZ66804-0	UNIT, POWERED USB I/F PCB	1	Option
169	TZ66715-0	SA, POWERED USB I/F PCB	1	
170	TZ54110-0	PLATE, POWERED USB I/F 2	1	
171	E14030-040F	SCREW, BHT (ST), M3.0 × 4	2	
172	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
173	TZ66809-0	UNIT, USB HUB I/F PCB	1	Option
174	TZ66718-0	SA, USB HUB I/F PCB	1	
175	TZ54105-0	PLATE, USB I/F 2	1	
176	E14030-040F	SCREW, BHT (ST), M3.0 × 4	2	
177	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
178	TZ66805-0	UNIT, ETHERNET E type I/F PCB	1	Option
179	TZ66716-0	SA, ETHERNET E type I/F PCB	1	
180	TZ54111-0	PLATE, LAN I/F	1	
181	TZ54112-0	JOINT, LAN I/F	2	
182	TZ44134-0	SHEET, LAN PCB	1	
183	E00530-040F	SCREW, BH, M3.0 × 4	4	
184	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	
185	TZ69901-0	UNIT, ETHERNET (SEH PS114)	1	Option
186	E14030-060F	SCREW, BHT (ST), M3.0 × 6	2	

List of Screws Used

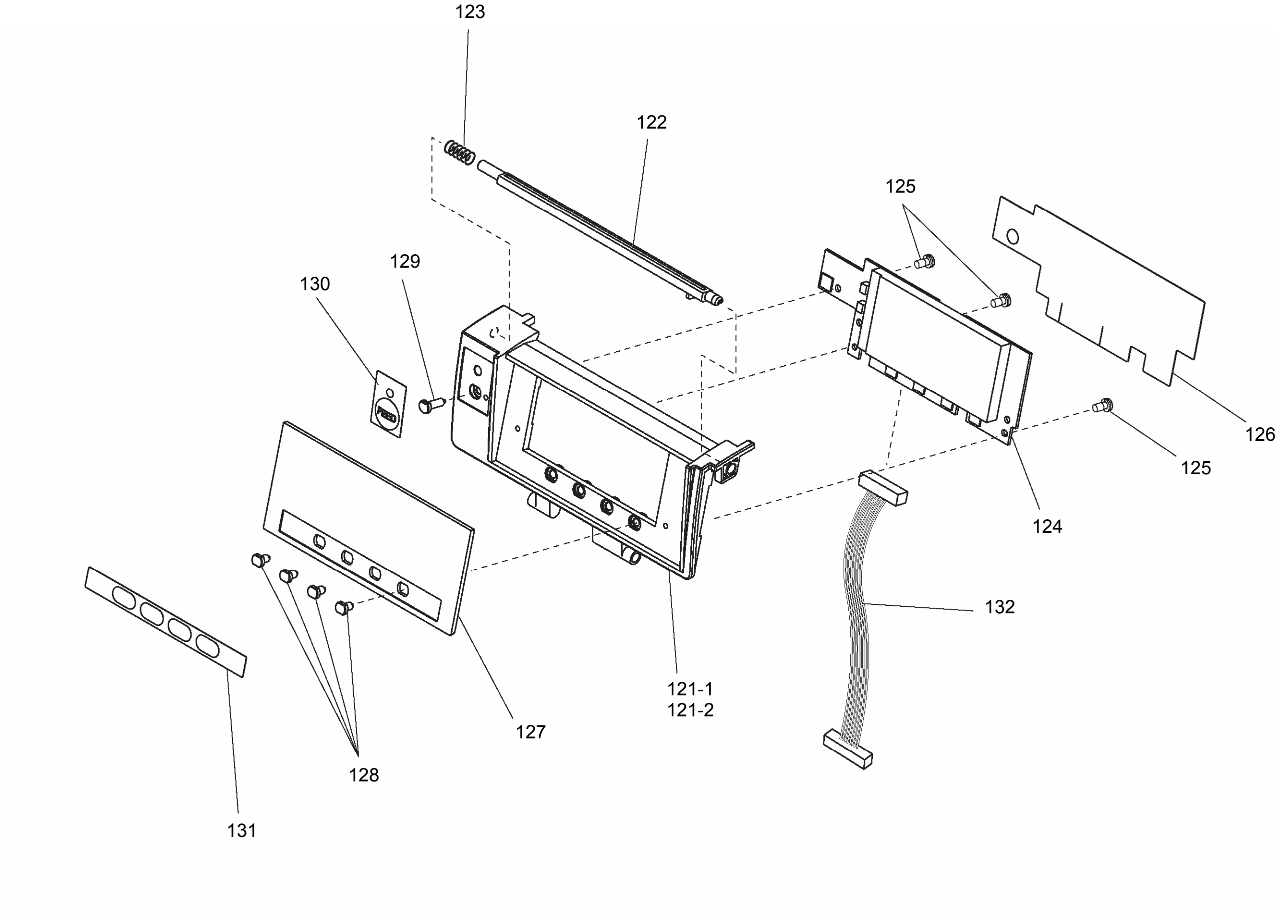
Part No.	Part Name	No.
E00530-040F	SCREW, BH, M3.0 × 4	181
E00620-080F	SCREW, PH (PW), M2.0 × 8	11
E10120-080F	SCREW, PHT (PT) M2.0 × 8	83
E00130-060F	SCREW, PHT (ST) M3.0 × 6	22
E10130-080F	SCREW, PHT (#2), M3.0 × 8	86
E14020-040F	SCREW, BHT (ST), M2.0 × 4	57, 61
E11130-040F	SCREW, BHT (ST), M3.0 × 4	141
E11130-060F	SCREW, PHT (ST), M3.0 × 6	17, 151
E12820-060F	SCREW, BHT (PT) M2.0 × 6	93
E12830-100F	SCREW, BHT (PT), M3.0 × 10	142
E13517-070F	SCREW, No. 0, PHT (BT#3), M1.7 × 7	63
E14030-040F	SCREW, BHT (ST), M3.0 × 4	160, 171, 176, 183
E14030-060F	SCREW, BHT (ST), M3.0 × 6	4, 98, 100, 134, 136, 146, 156, 161, 167, 172, 177, 184, 186
E16930-060F	SCREW, PHT (ST, SW + PW), M3.0 × 6	52
E17930-060F	SCREW, BHT (BT), M3.0 × 6	70
E18330-080F	SCREW, BHT (BT, PW), M3.0 × 8	71

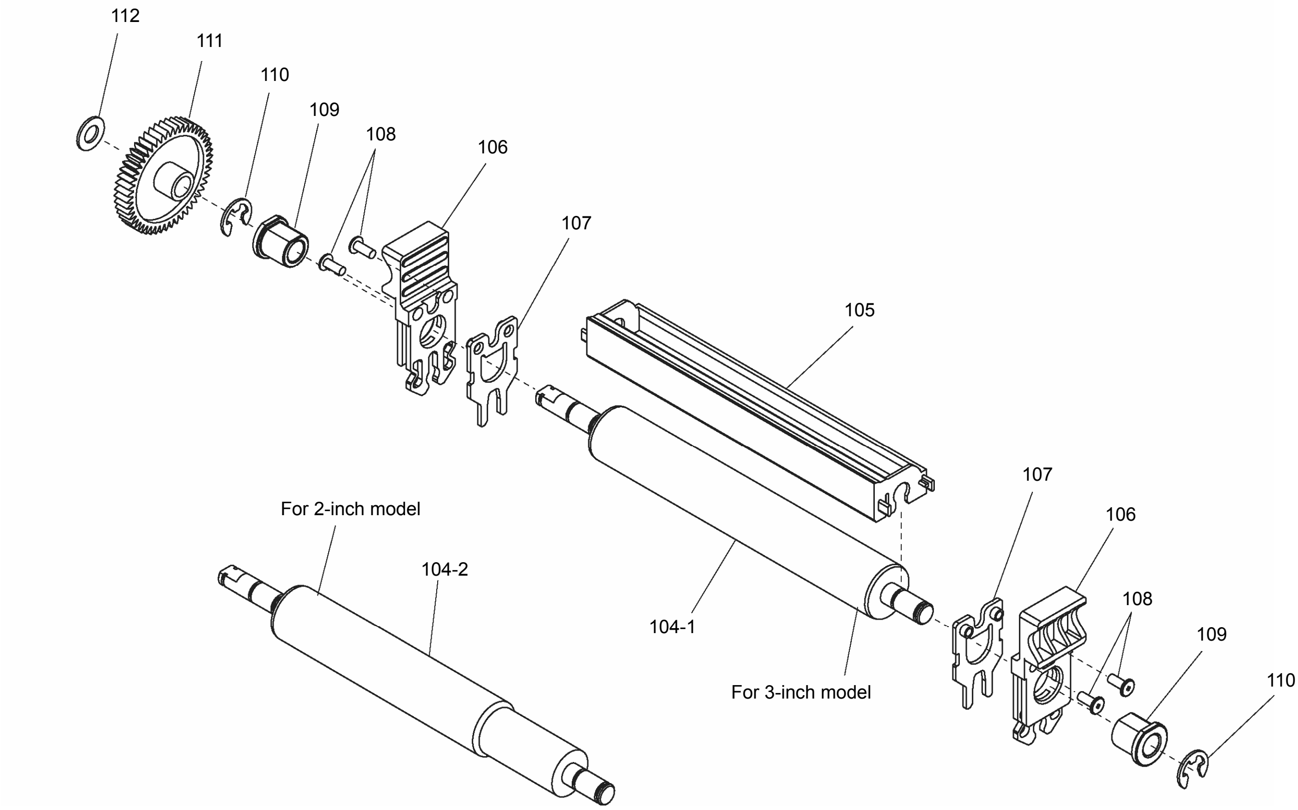
3-1-1. Mechanical Exploded Diagrams

Exploded diagram 1

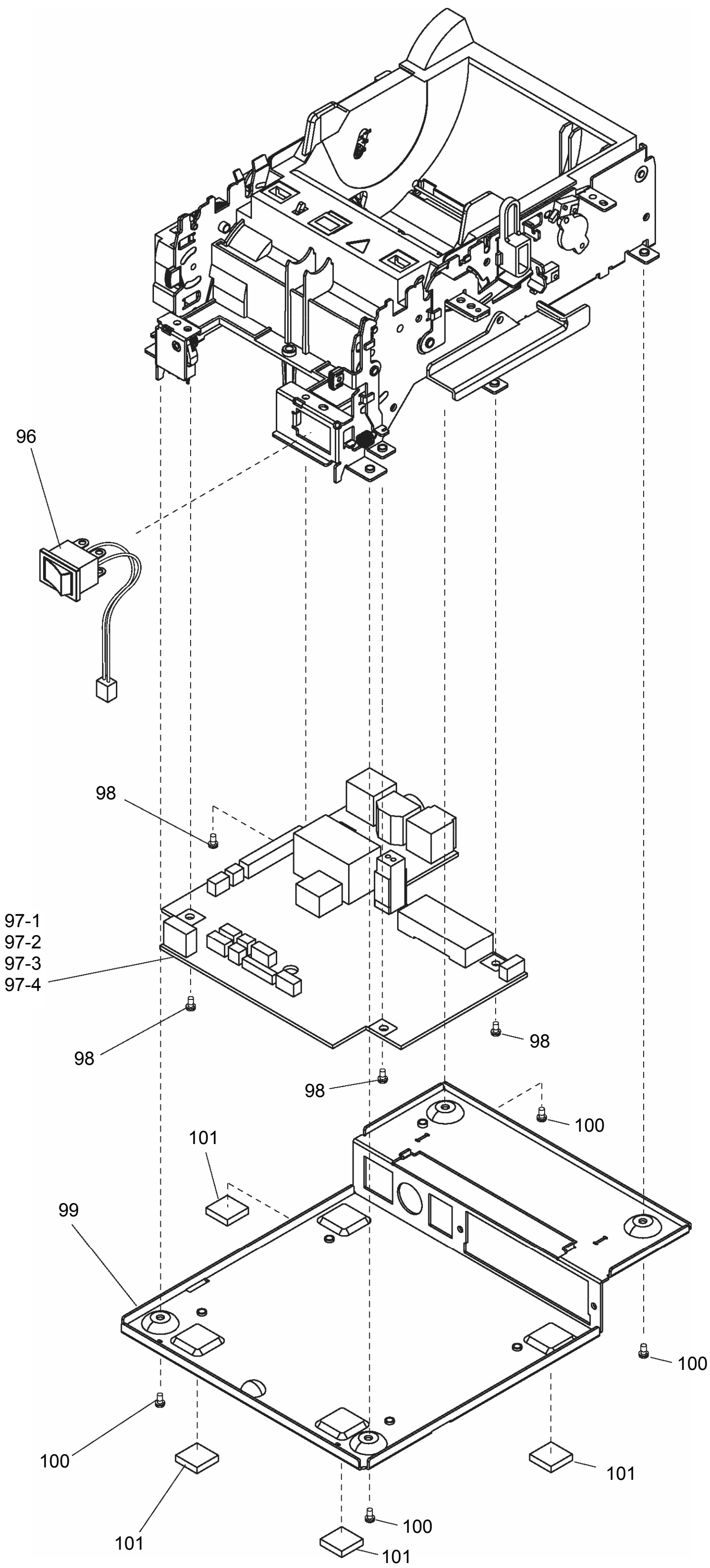


Exploded diagram 2

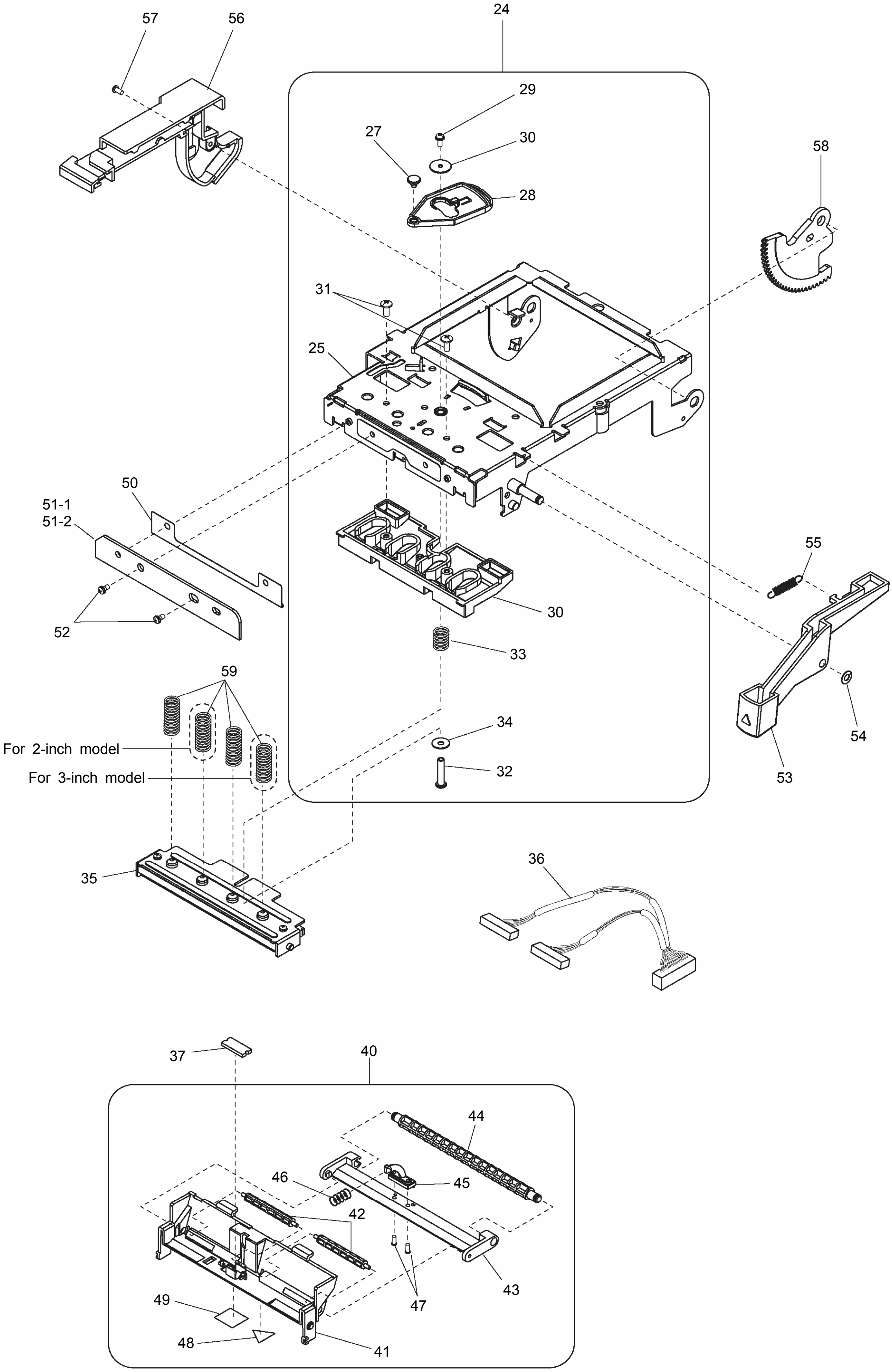




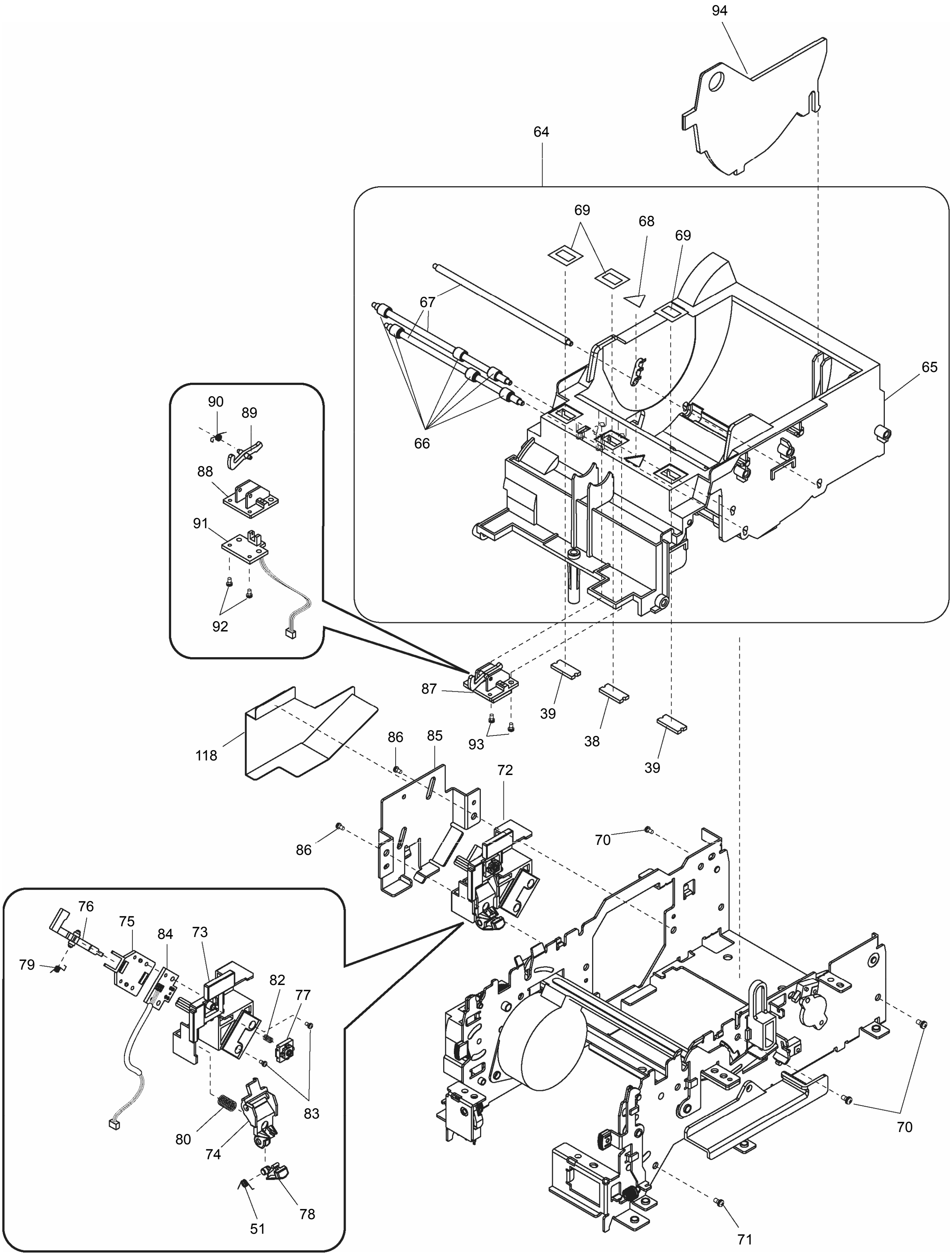
Exploded diagram 3



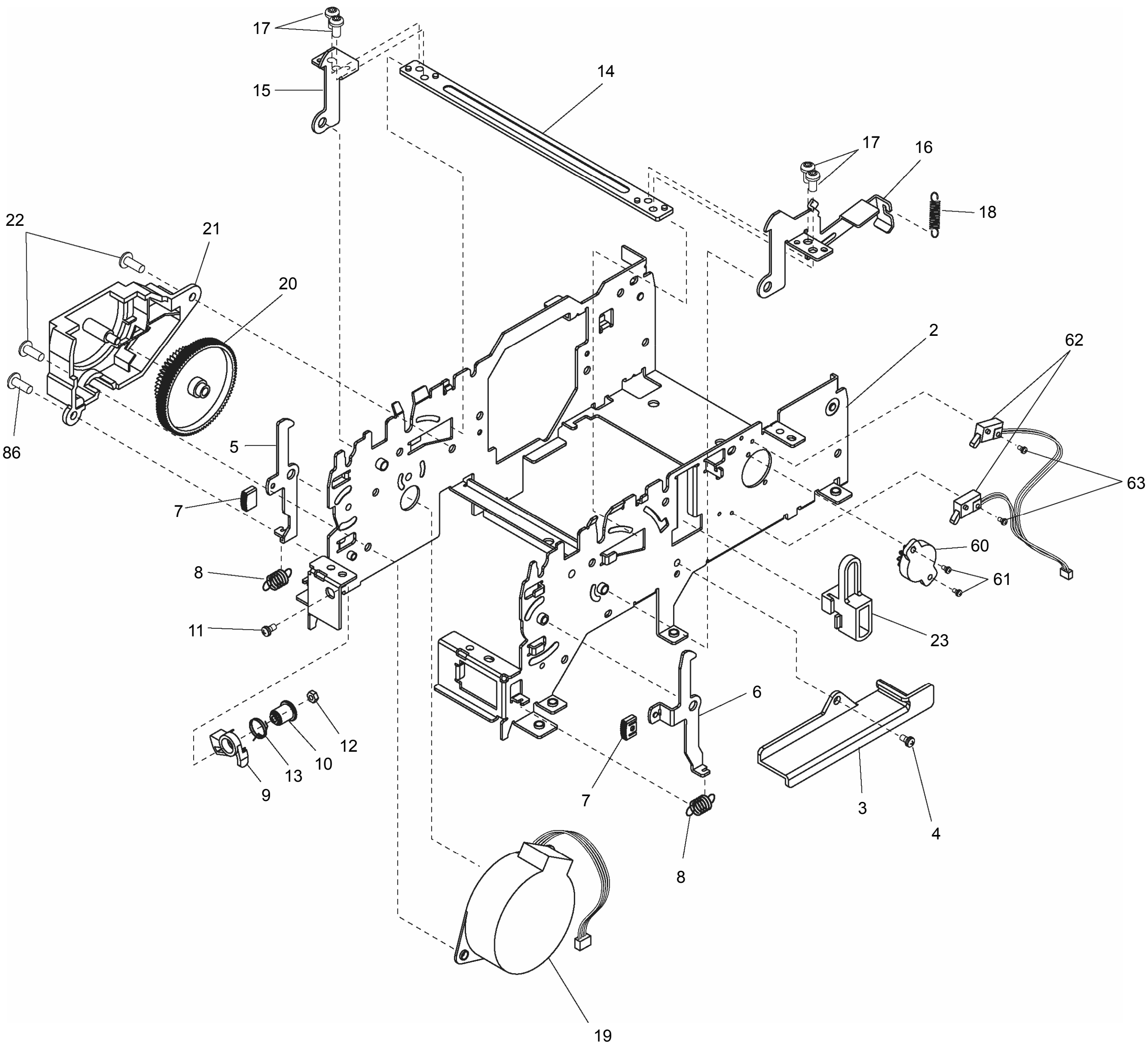
Exploded diagram 4



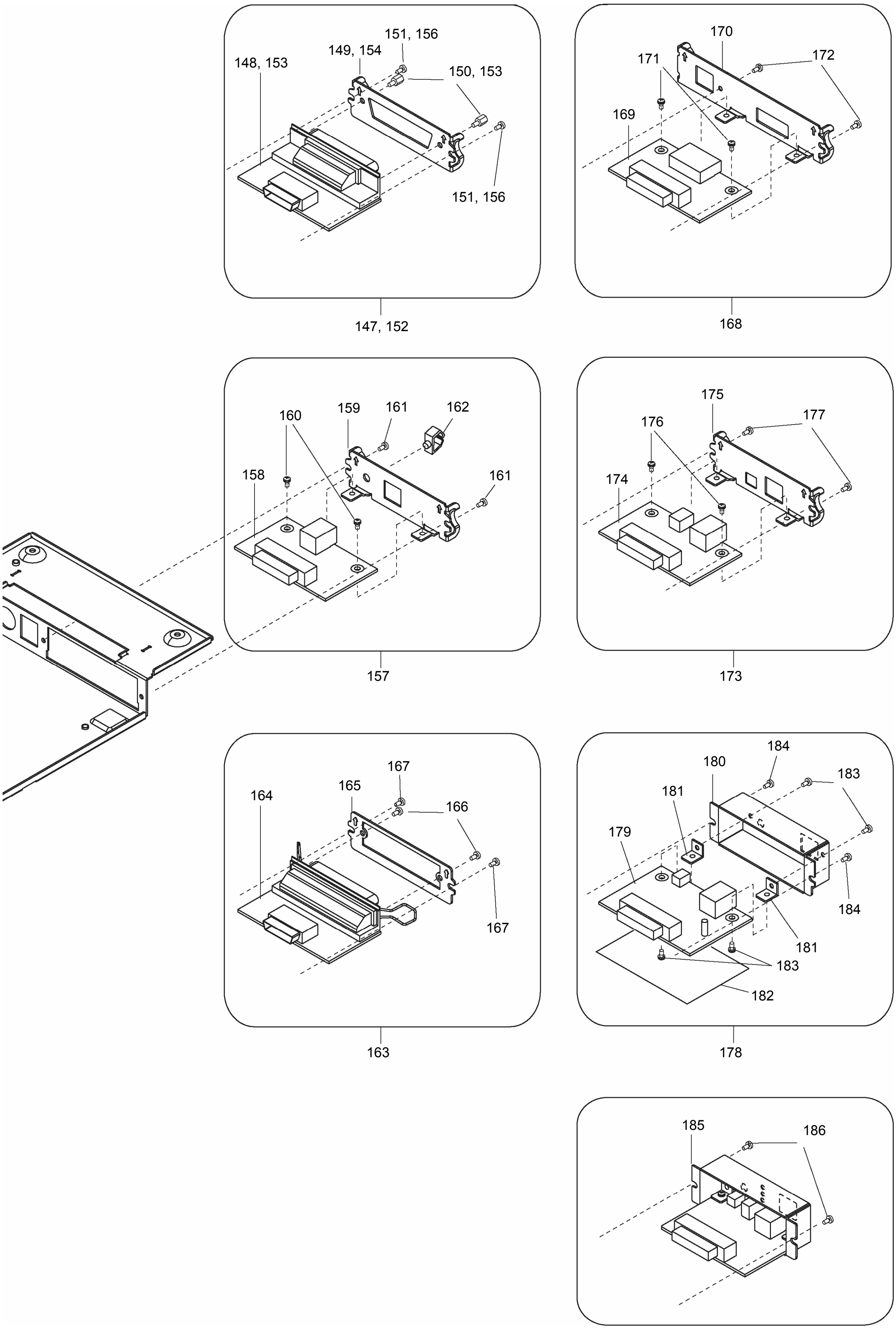
Exploded diagram 5



Exploded diagram 6

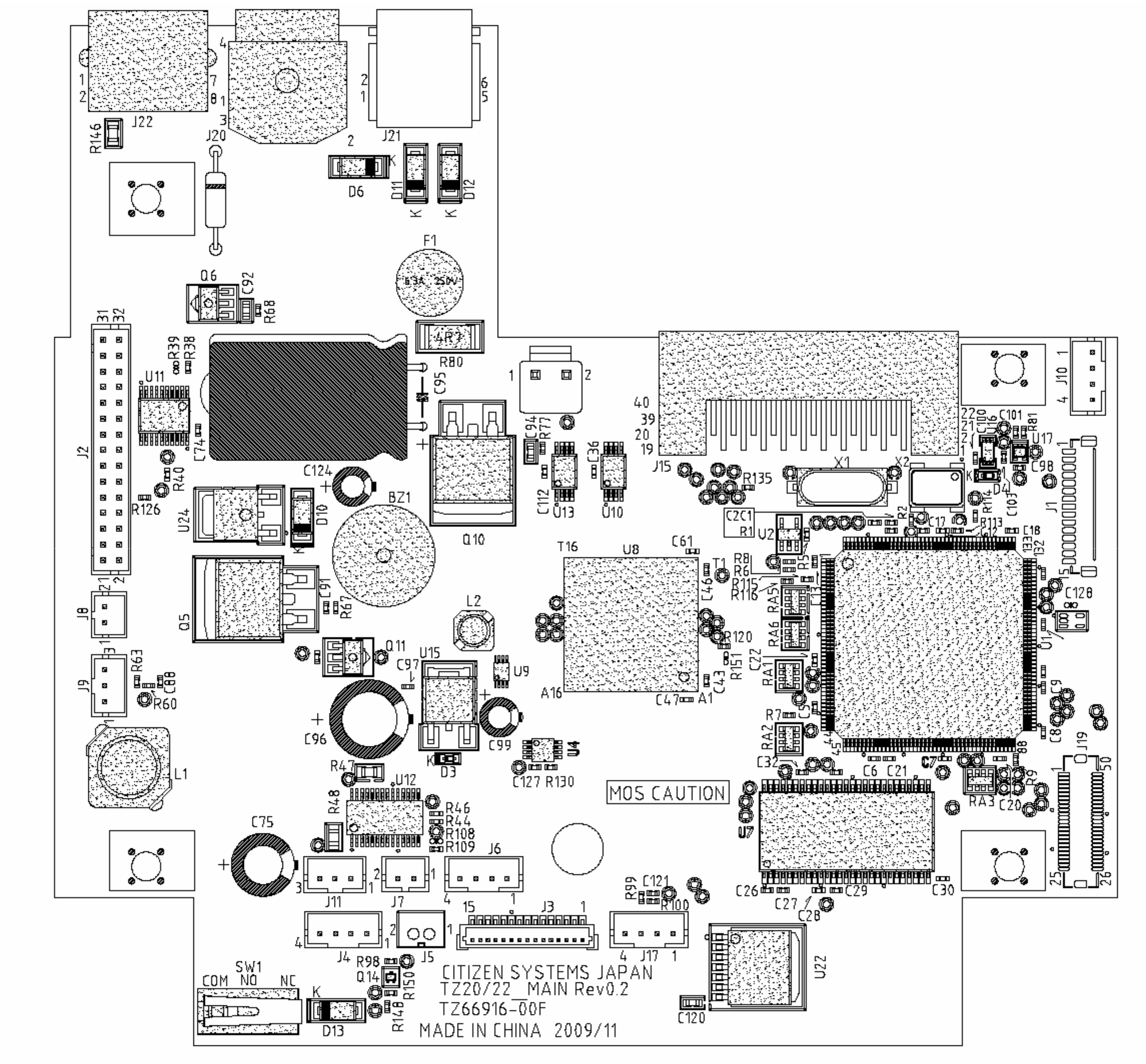


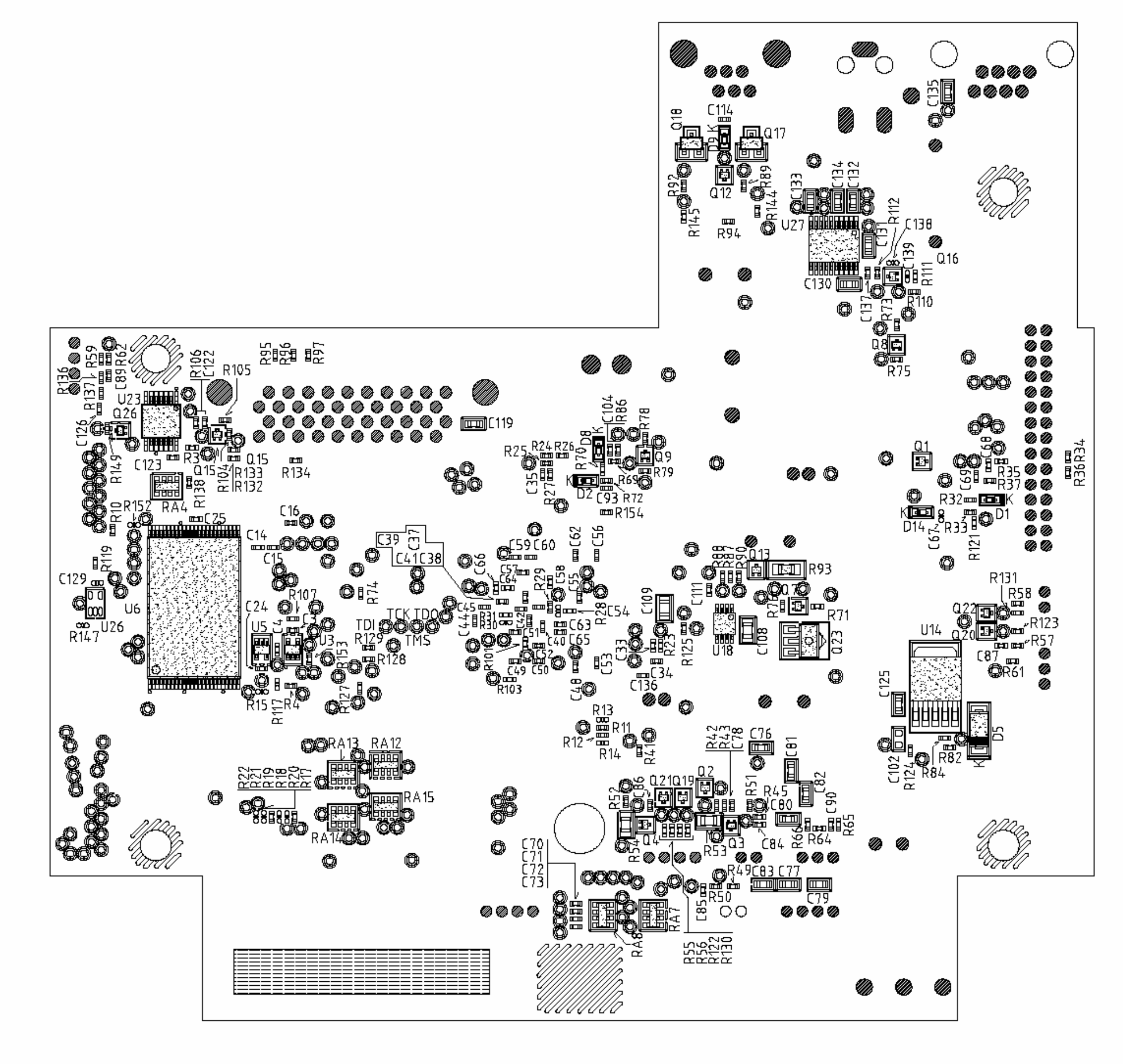
Exploded diagram 7



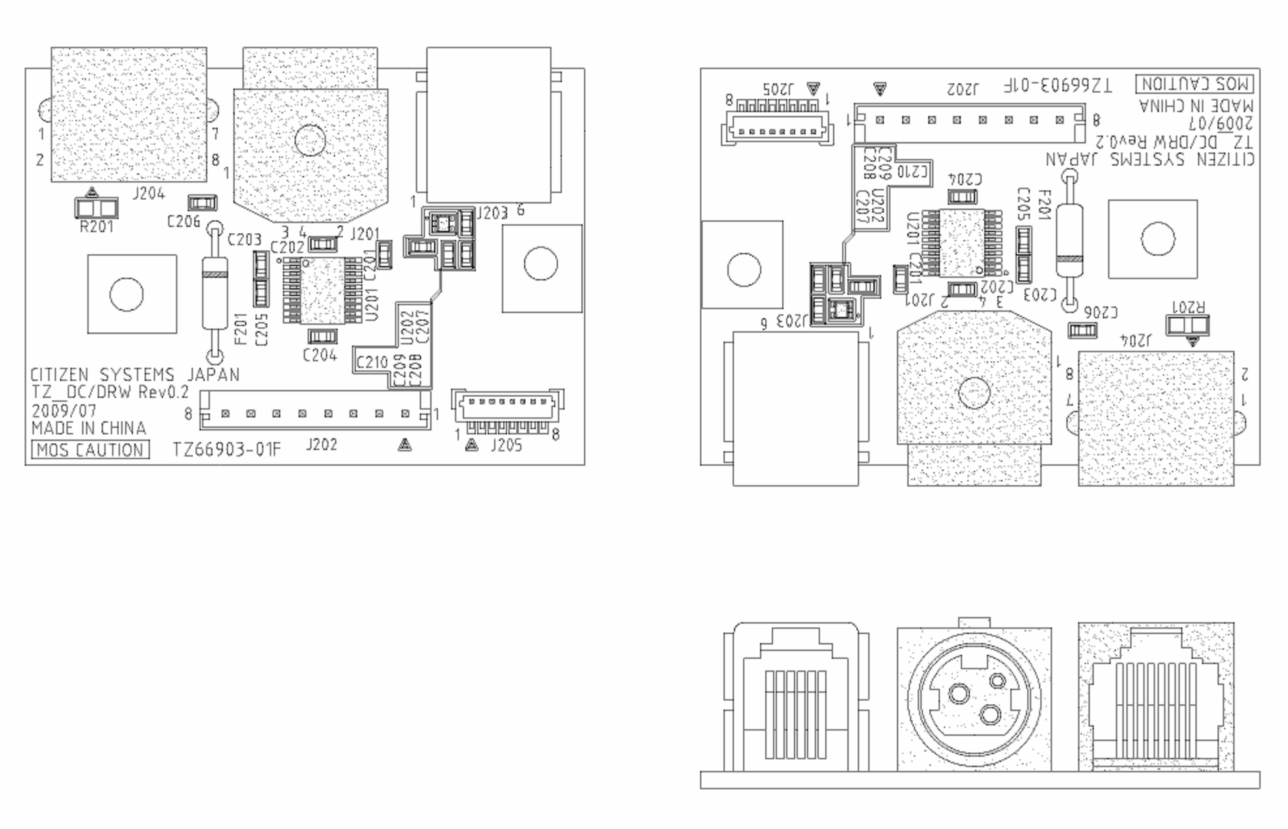
3-2. Parts Layout

3-2-1. SA, MAIN PCB

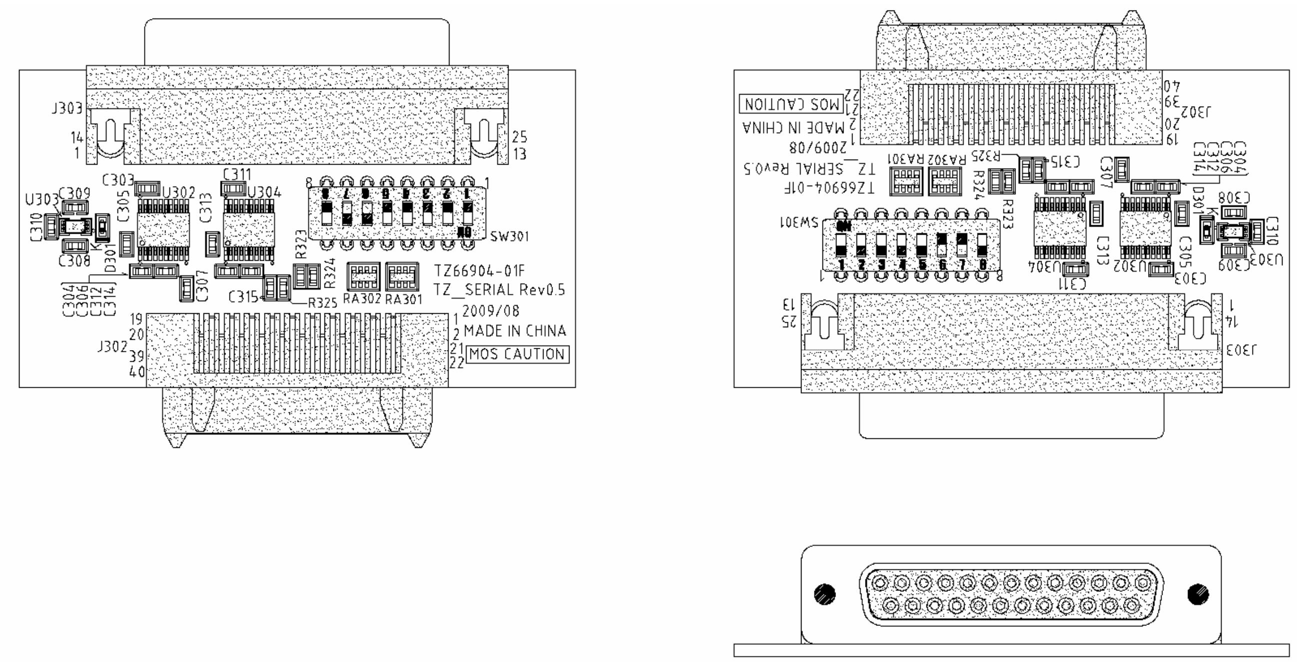



U6
U14
U18
U23
U26
U27
U3
U5
RA4
RA7
RA8
RA12
RA13
RA14
RA15
TDI
TCK
TMS
Q1
Q8
Q9
Q12
Q16
Q17
Q18
Q23
D1
D2
D5
D8
D14
C119
C135
R93
R71

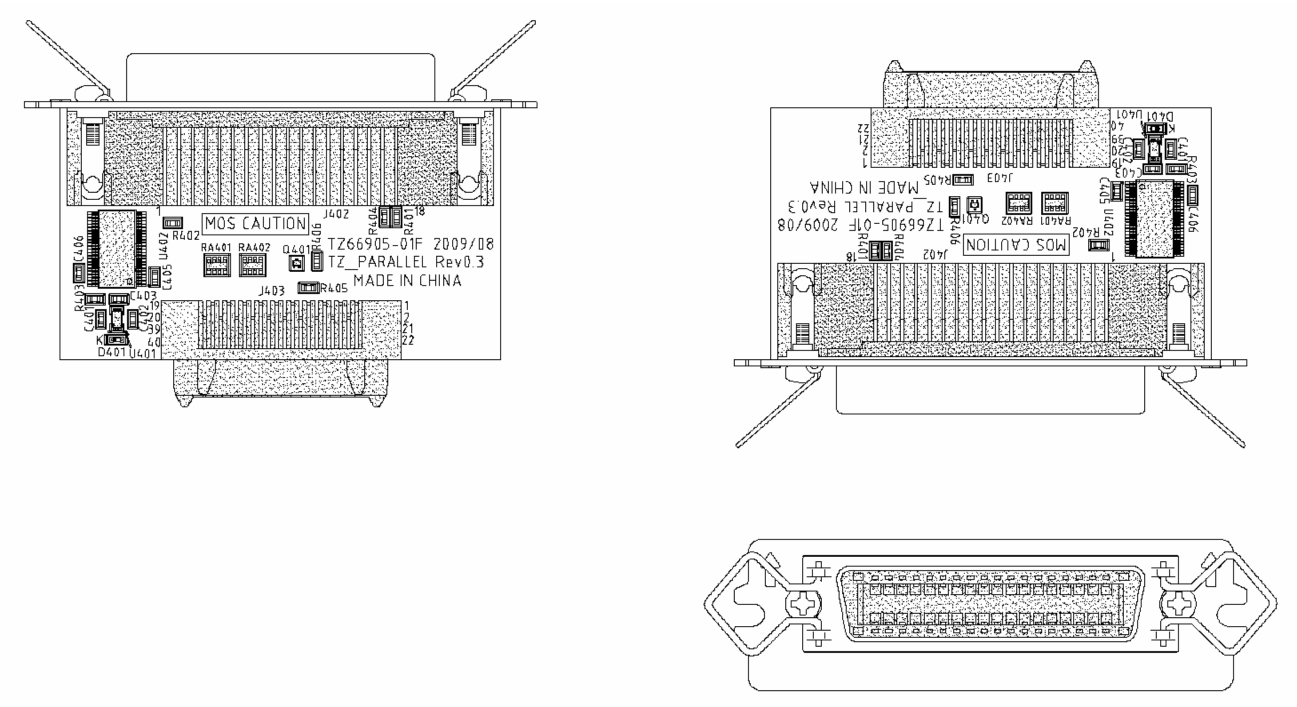
3-2-2. SA, DC PCB



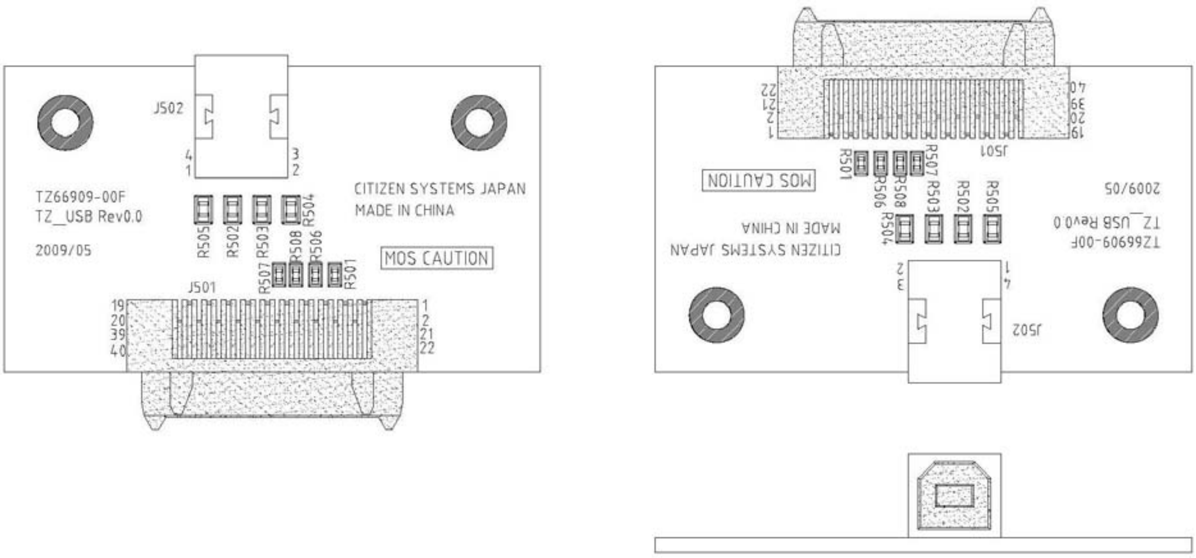
3-2-3. SA, SERIAL I/F PCB



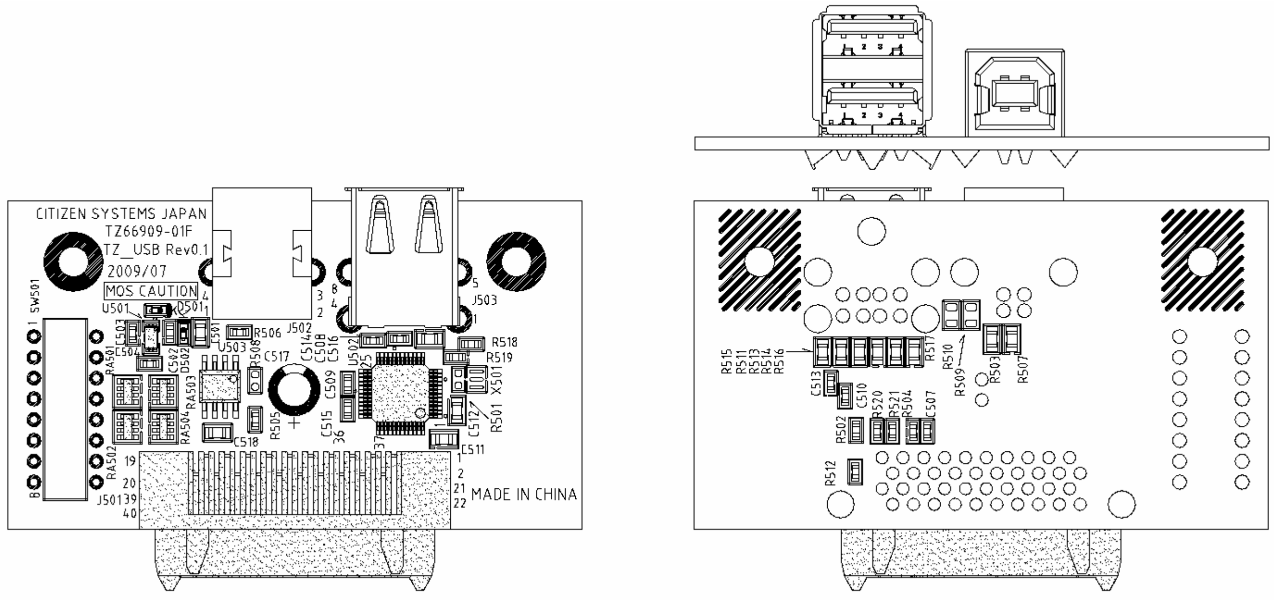
3-2-4. SA, PARALLEL I/F PCB



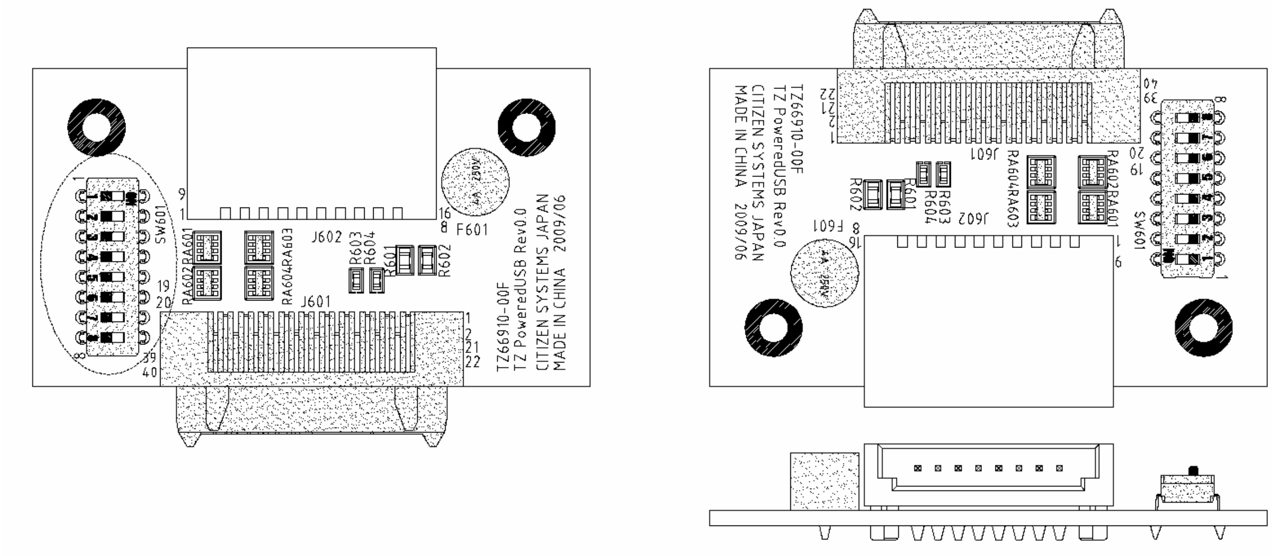
3-2-5. SA, USB I/F PCB



3-2-6. SA, USB HUB I/F PCB



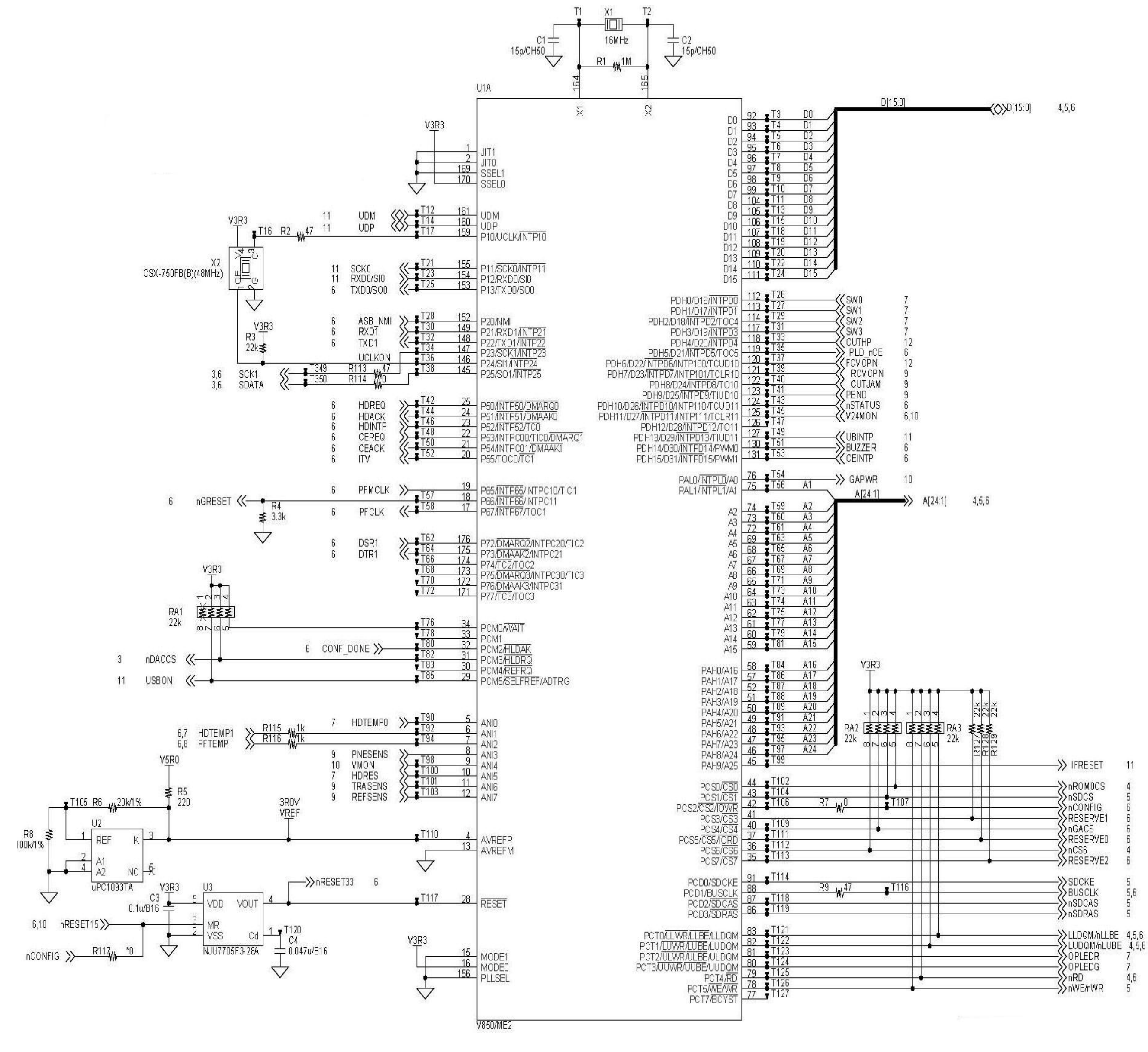
3-2-7. SA, POWERED USB I/F PCB



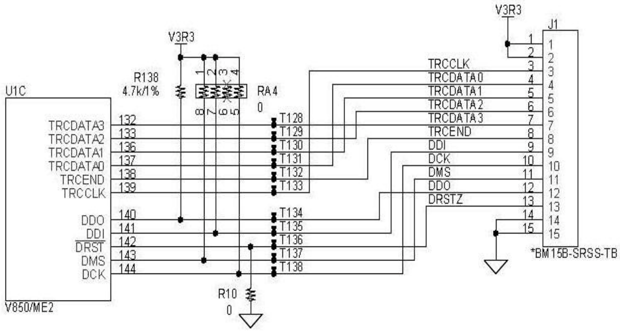
4. CIRCUIT DIAGRAMS

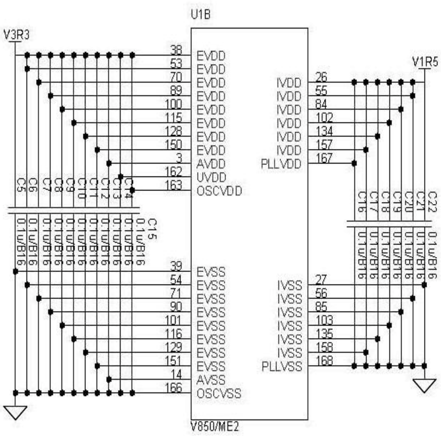
4-1. MAIN PCB

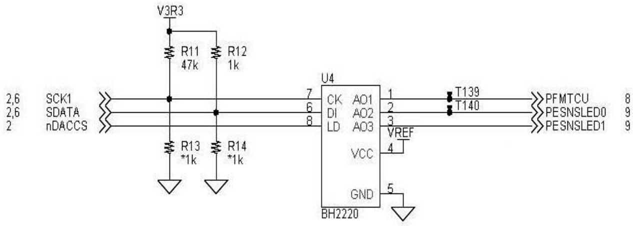
4-1-1. Main Control Board (CPU1)



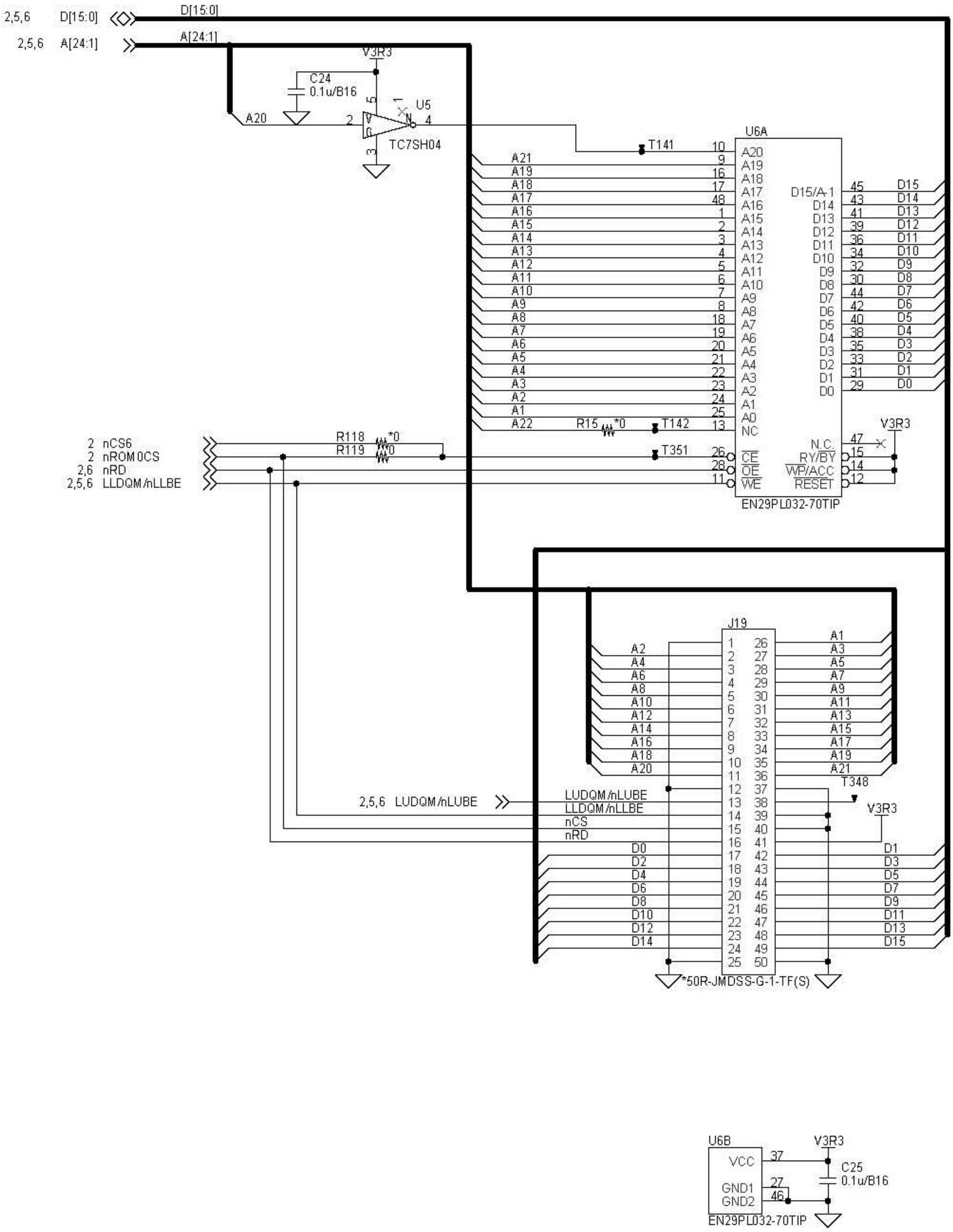
4-1-2. Main Control Board (CPU2/DAC)



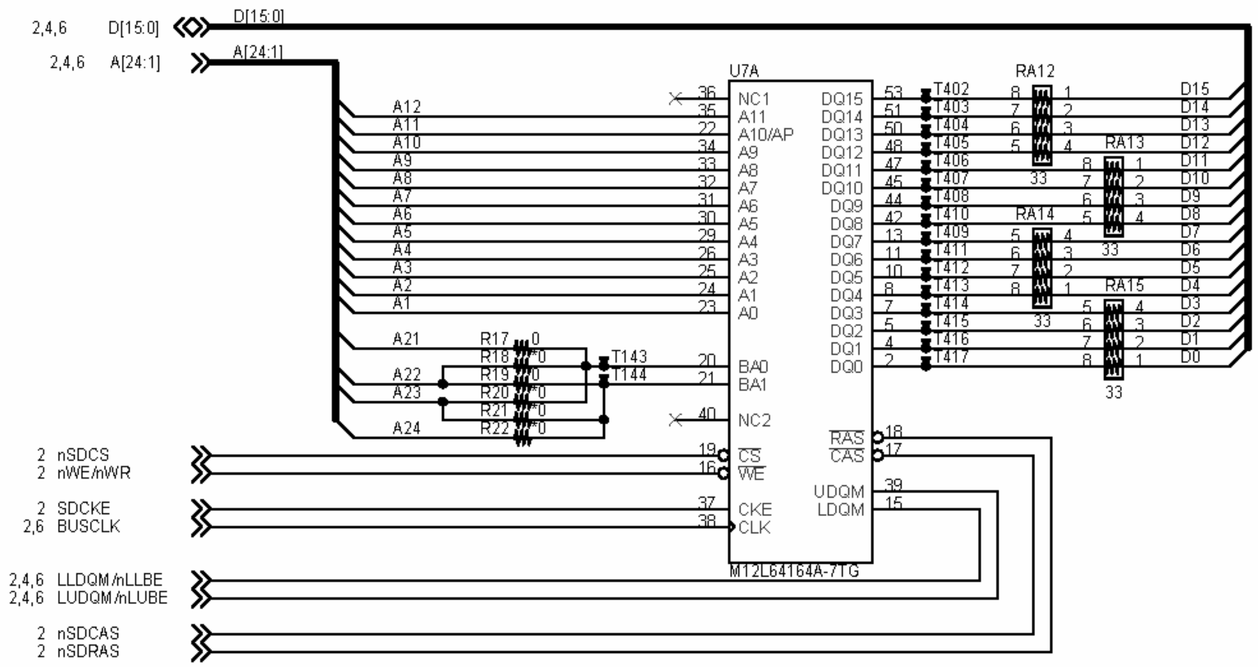


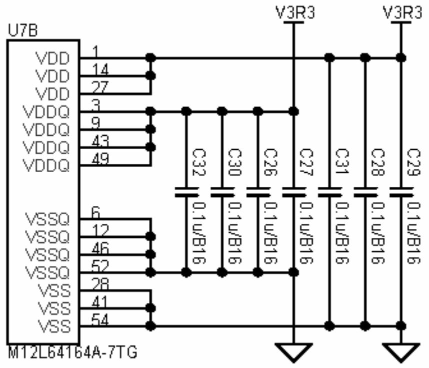


4-1-3. Main Control Board (ROM)

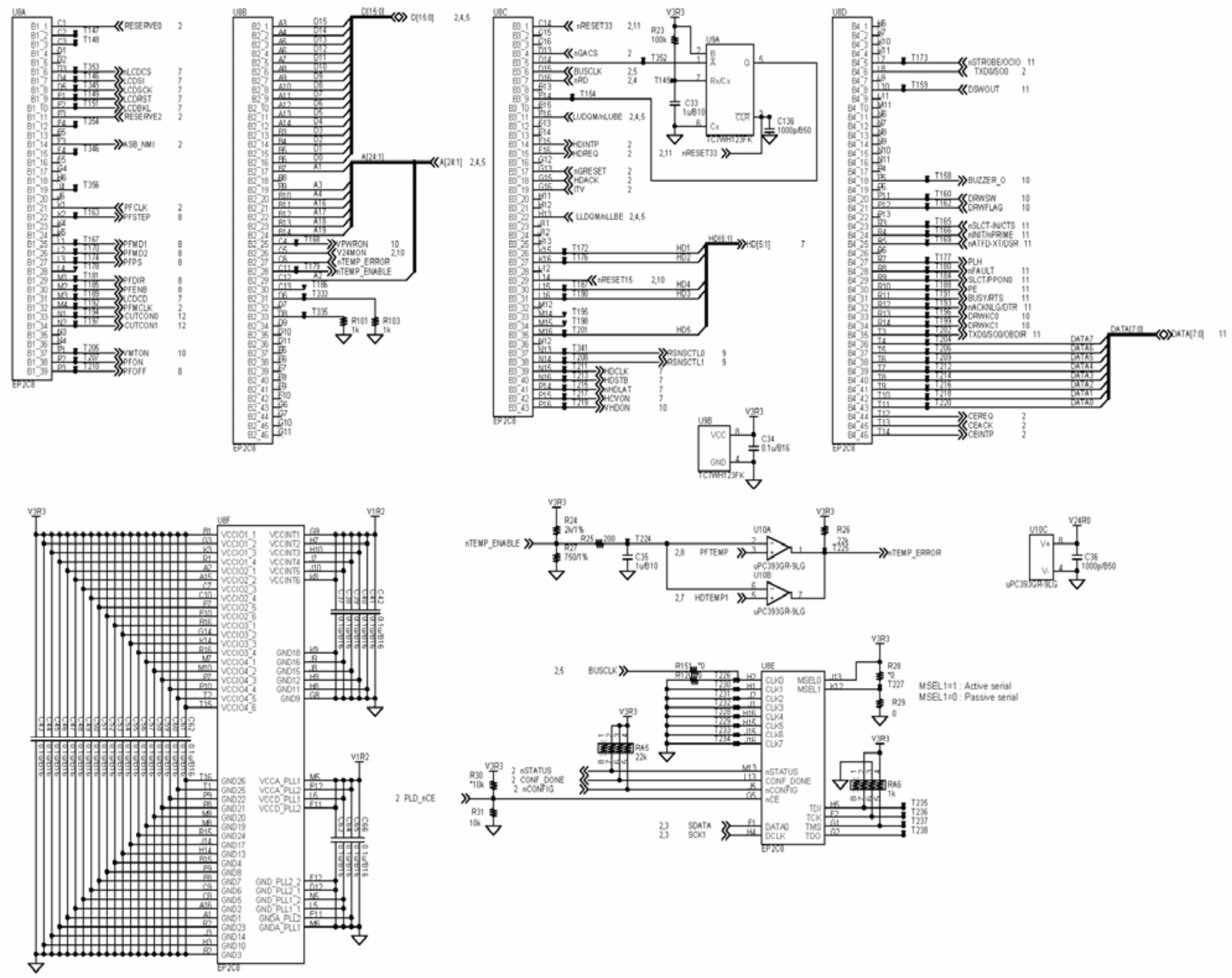


4-1-4. Main Control Board (RAM)

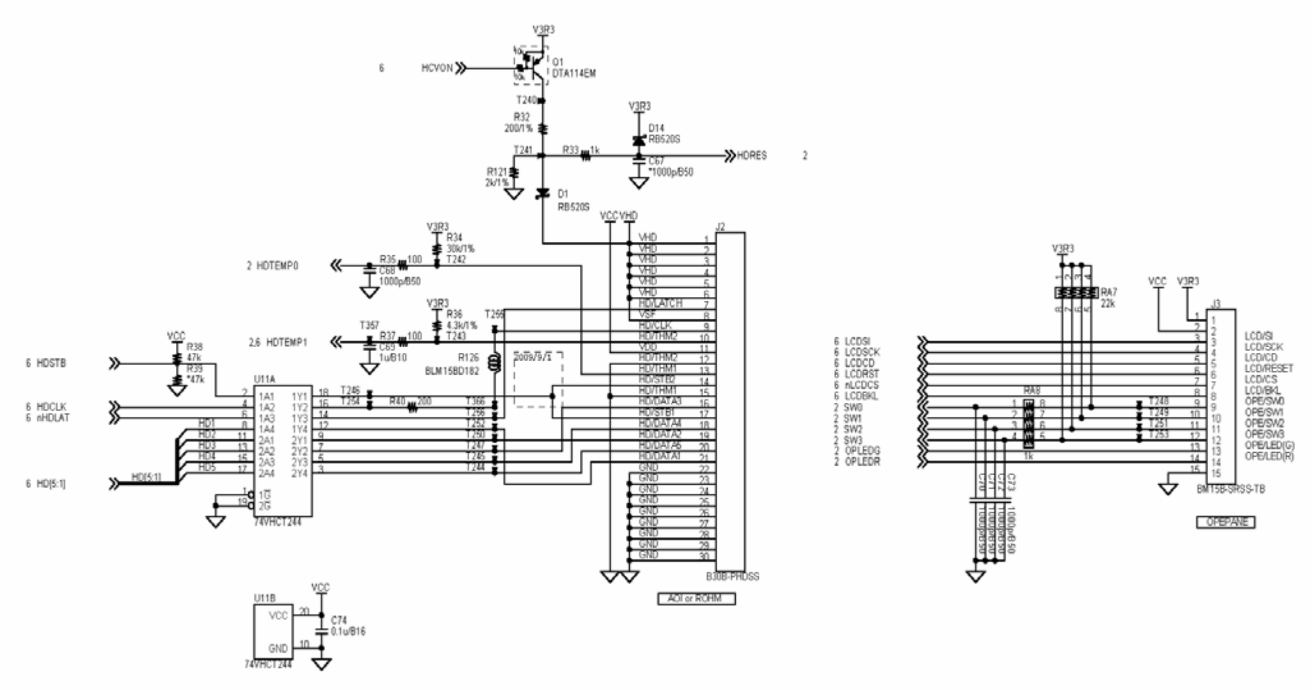




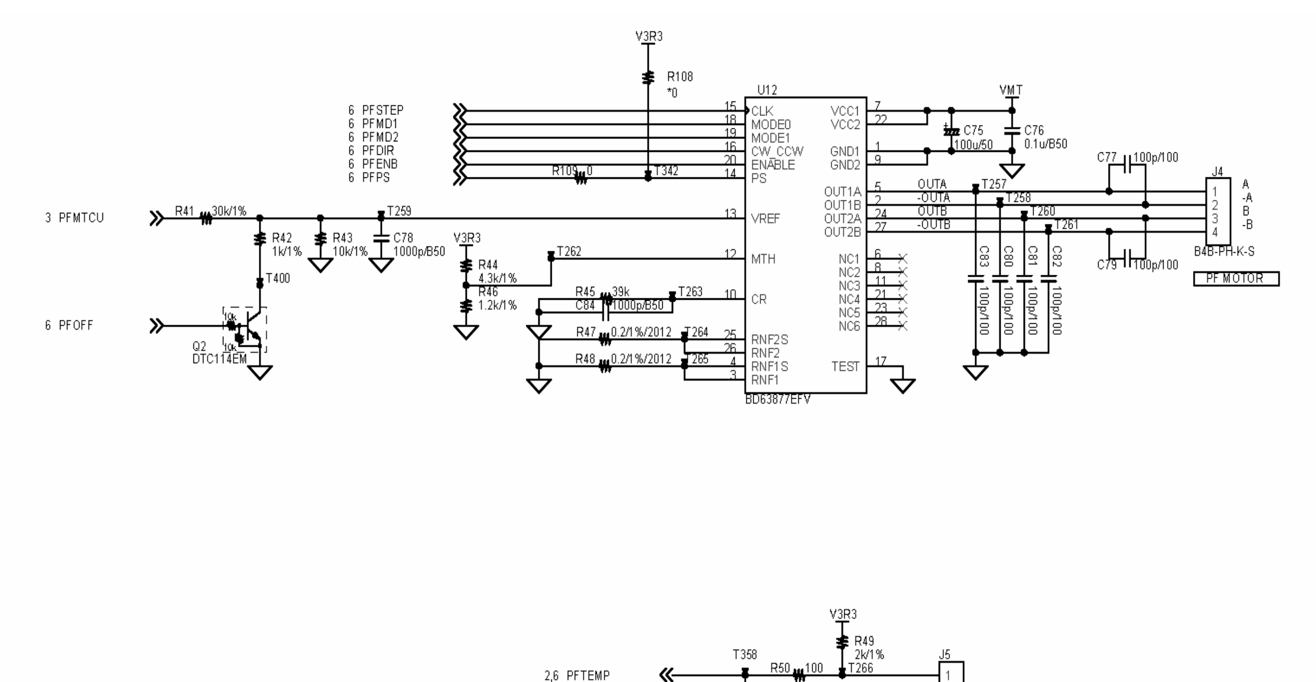
4-1-5. Main Control Board (GATE_ARRAY)



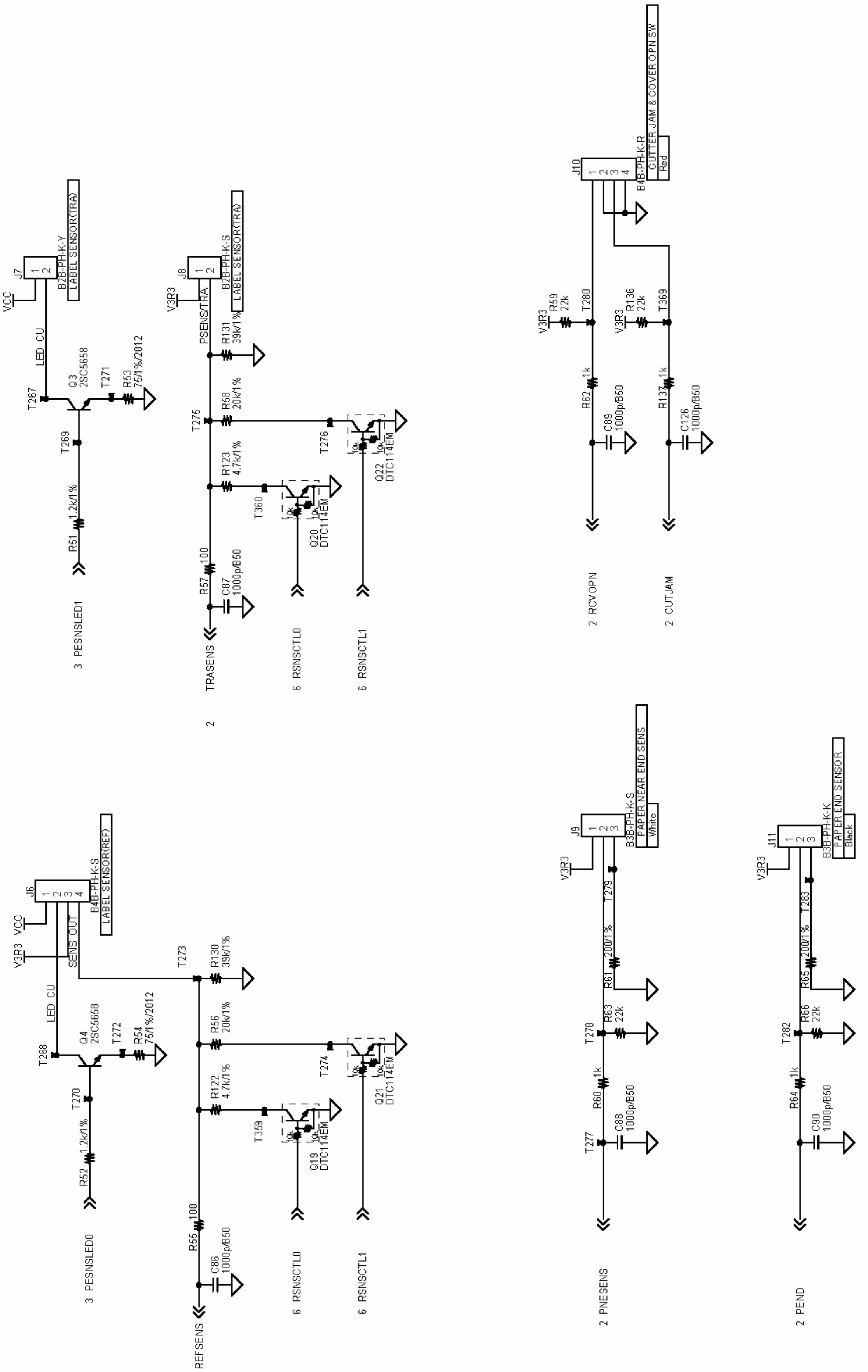
4-1-6. Main Control Board (HEAD, OP-PANEL)



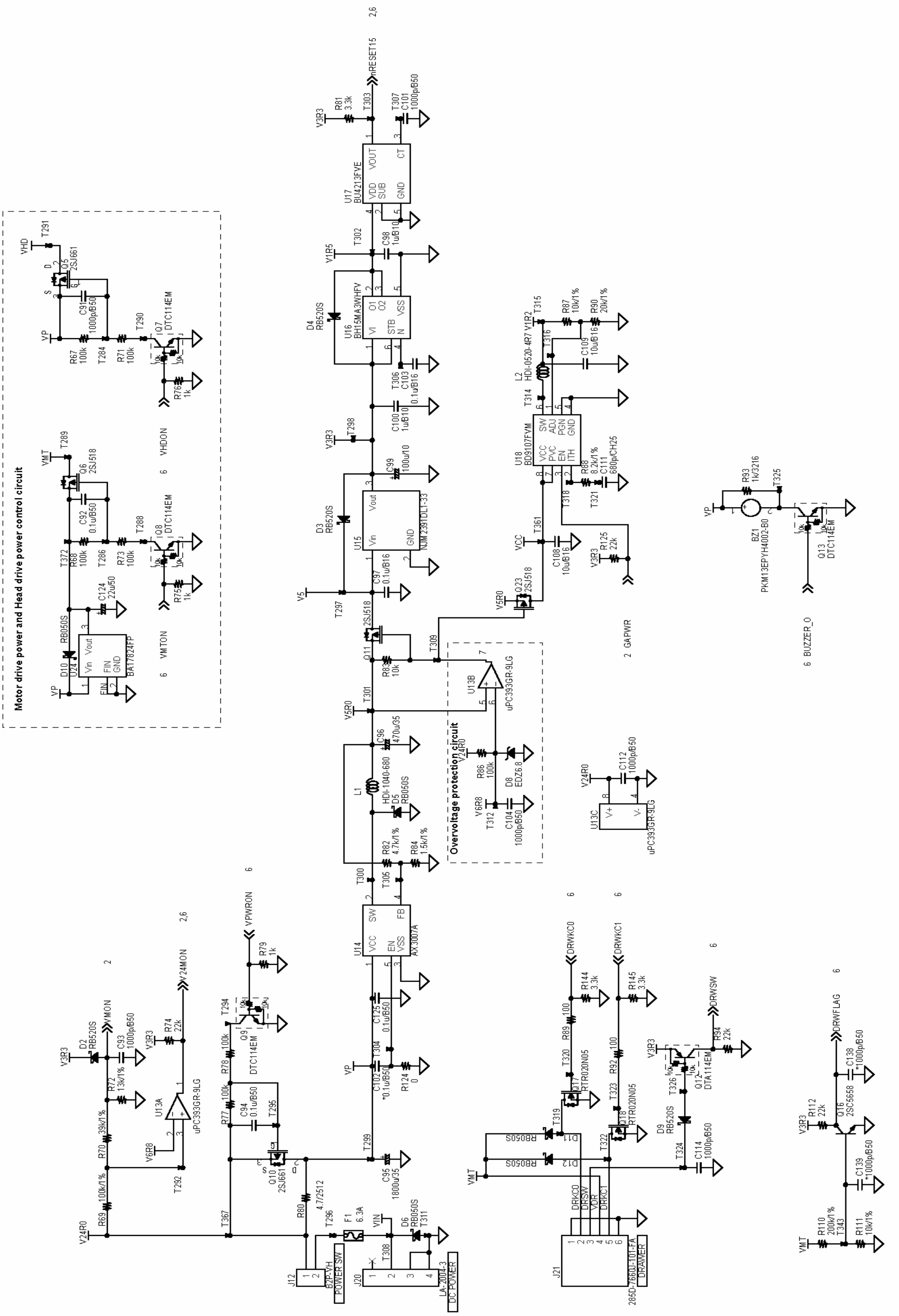
4-1-7. Main Control Board (PF MOTOR)



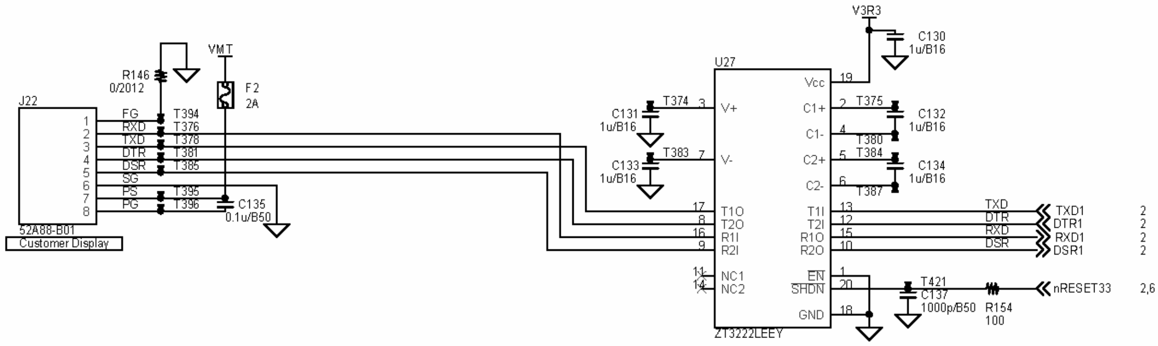
4-1-8. Main Control Board (SENSOR)

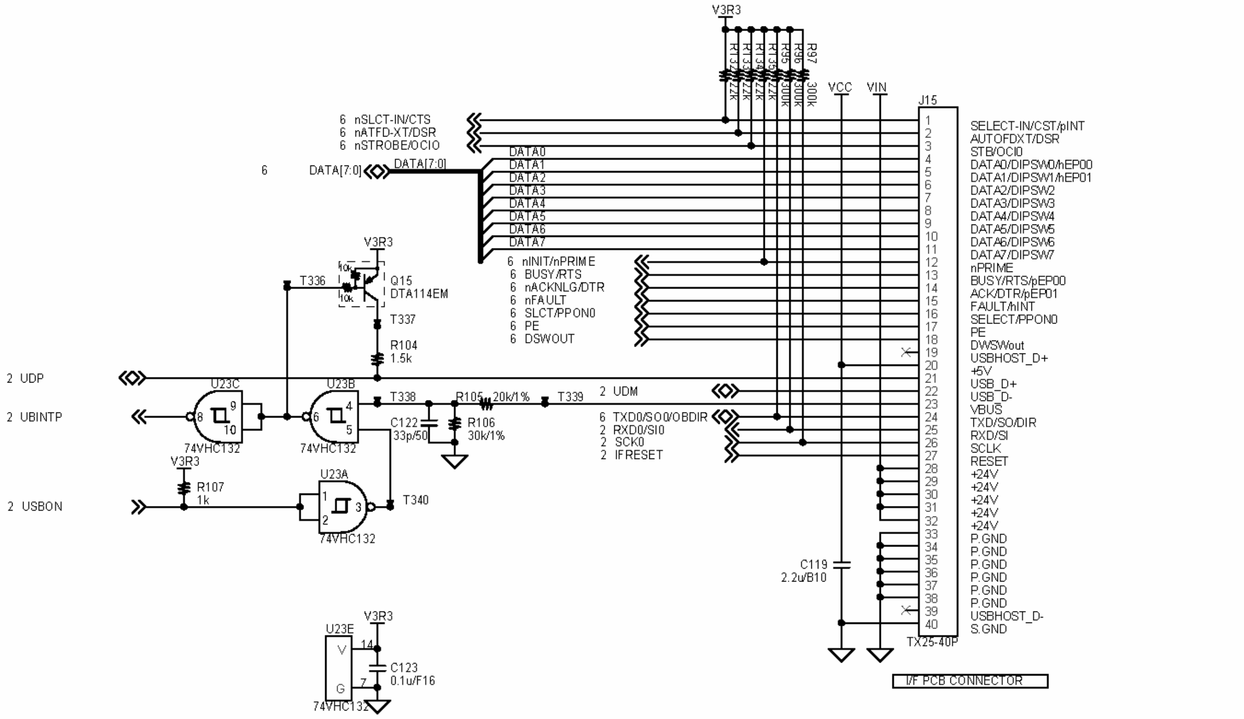


4-1-9. Main Control Board (POWER/DRAWER/BUZZER)

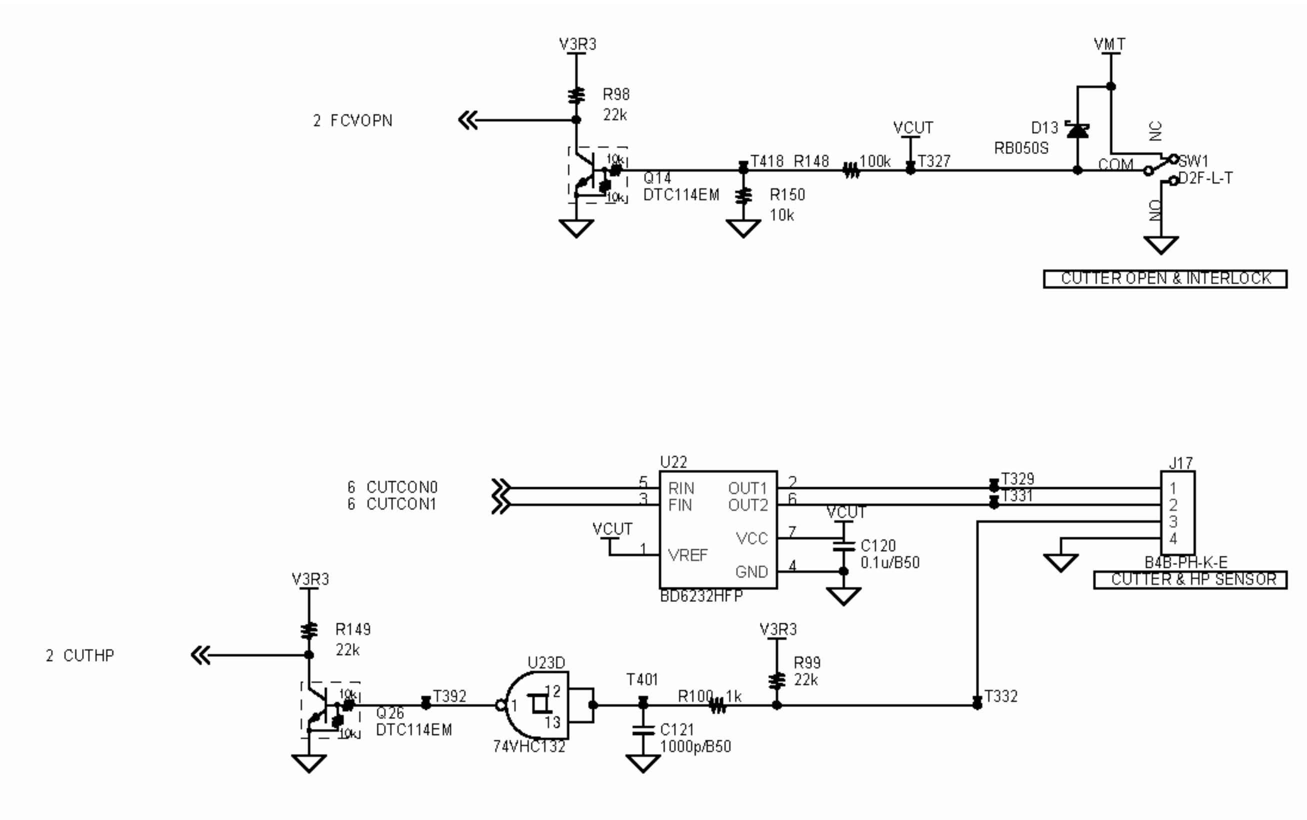


4-1-10. Main Control Board (IF PCB CON / OPTION IF)

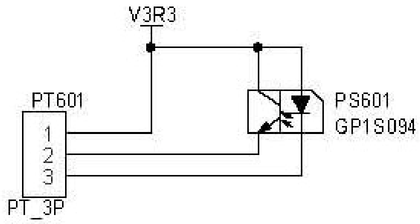




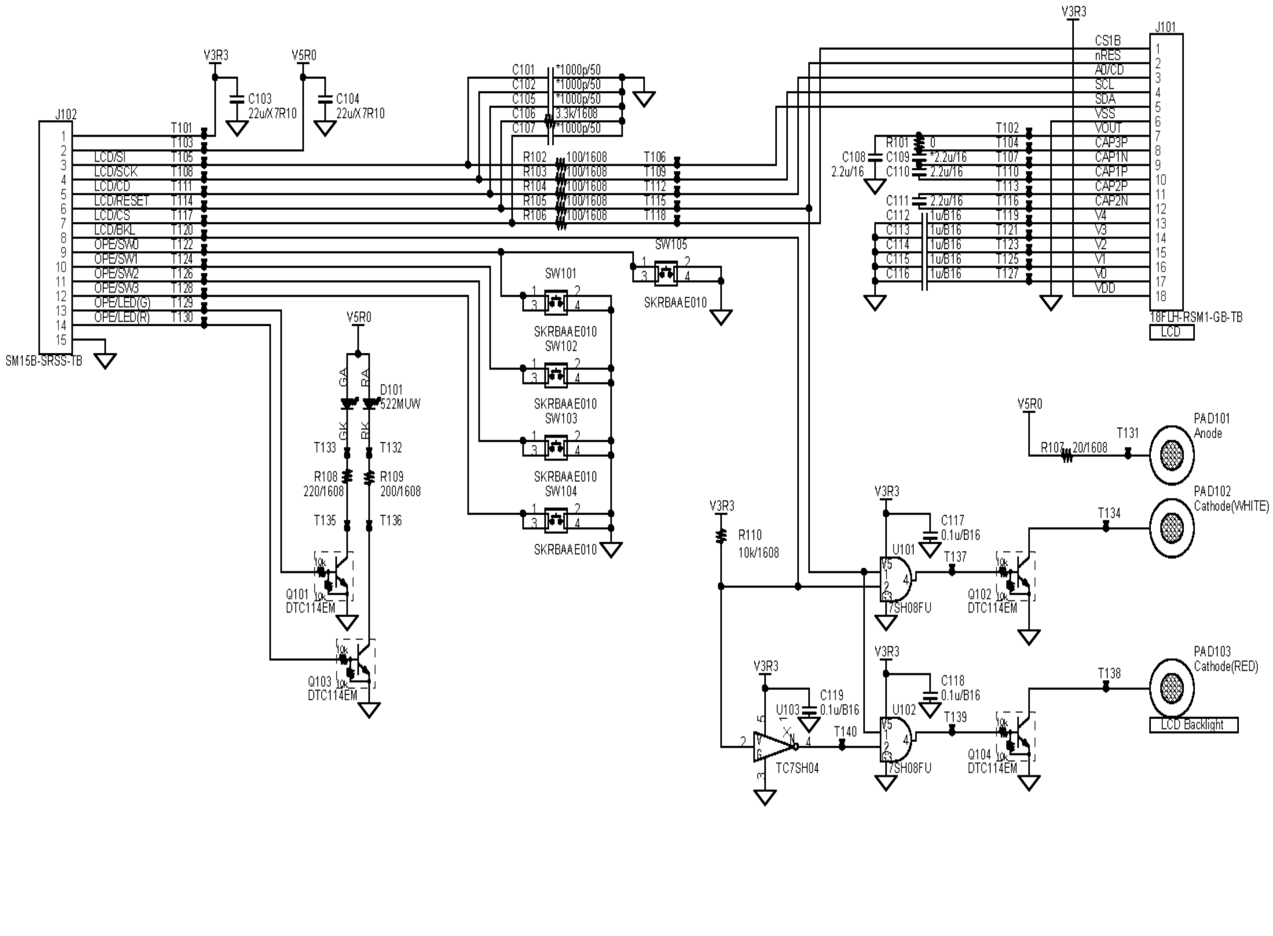
4-1-11. Main Control Board (CUTTER)



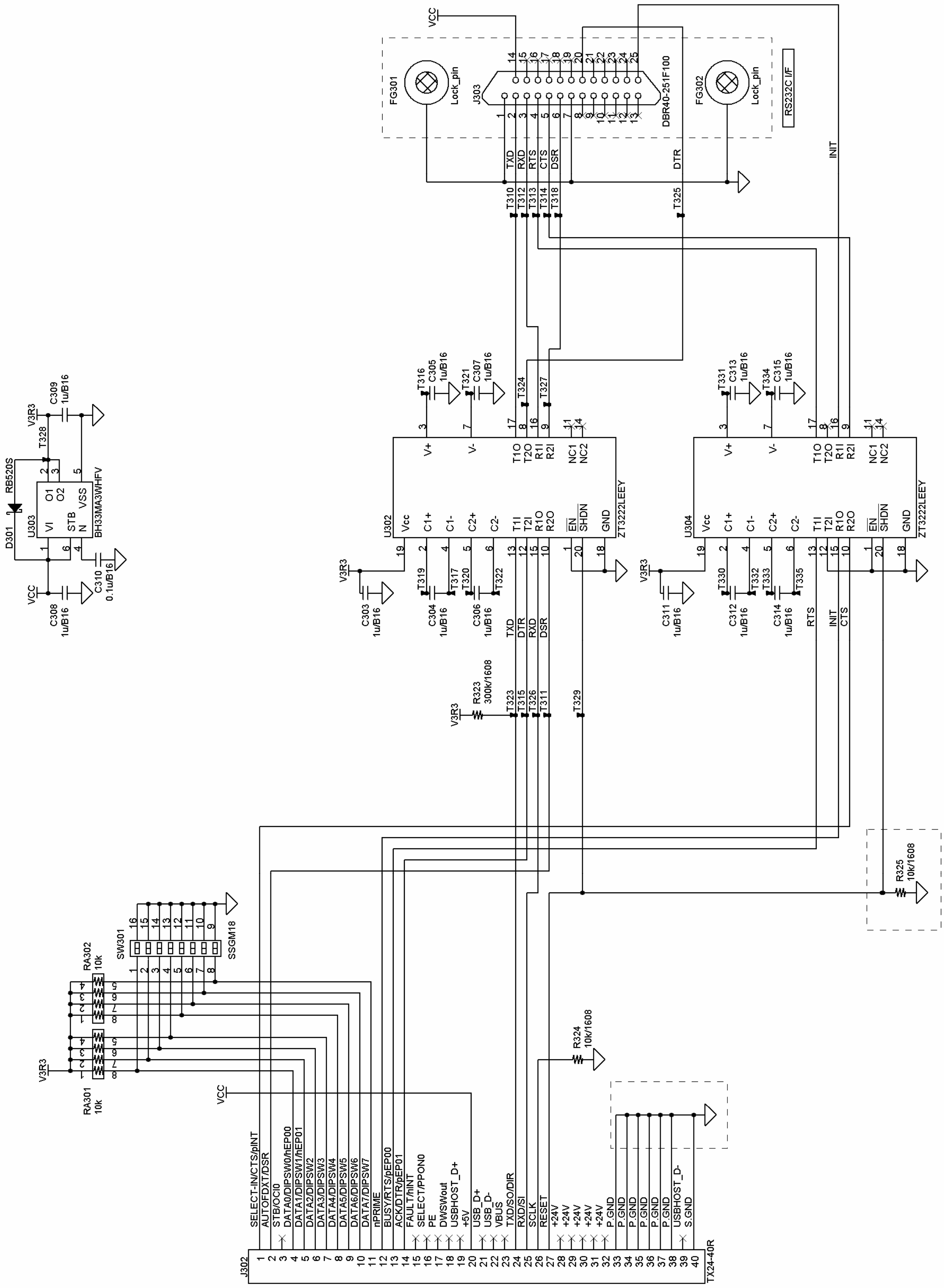
4-2. PE, PNE Sensor



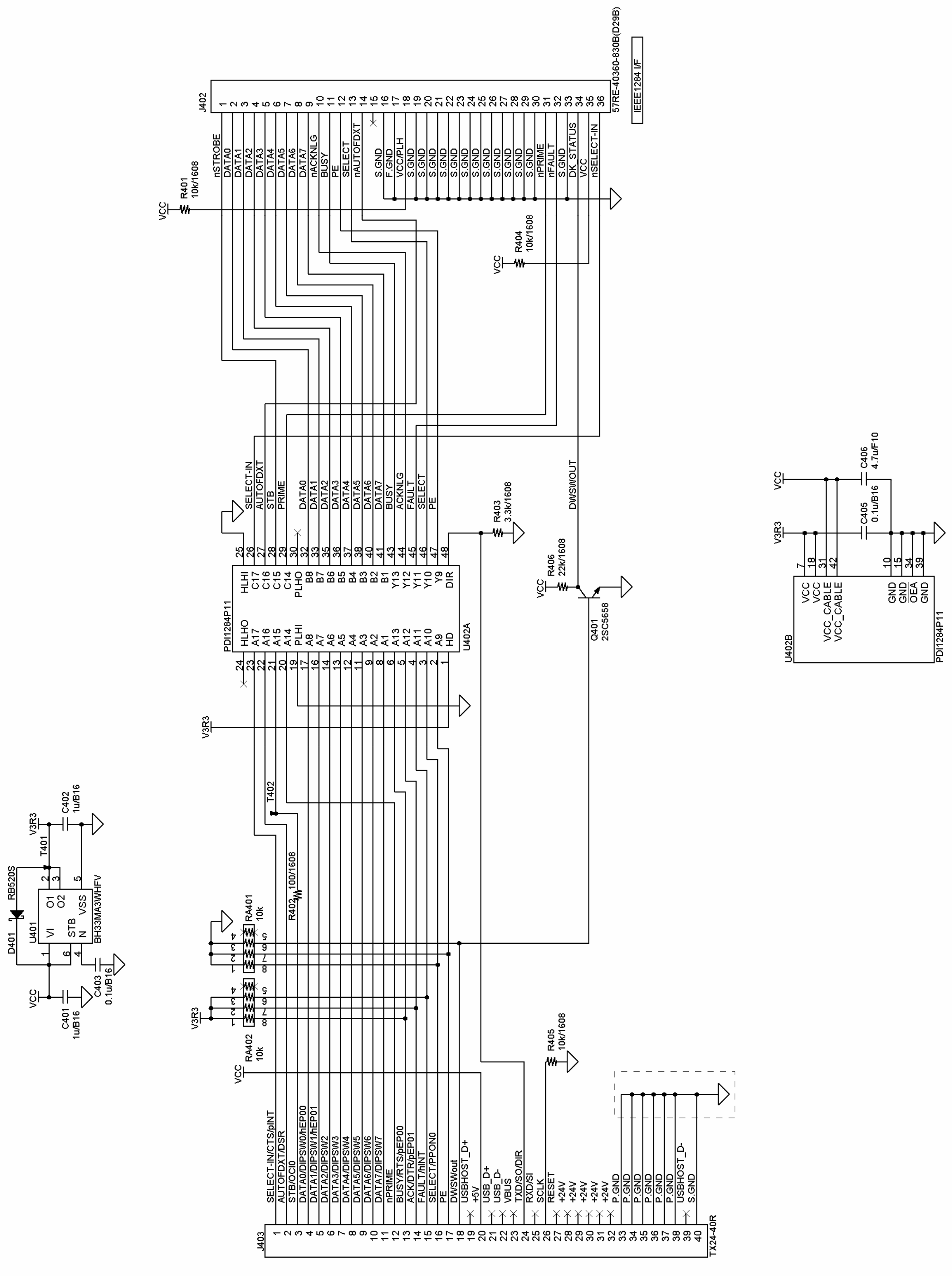
4-3. Operation Panel



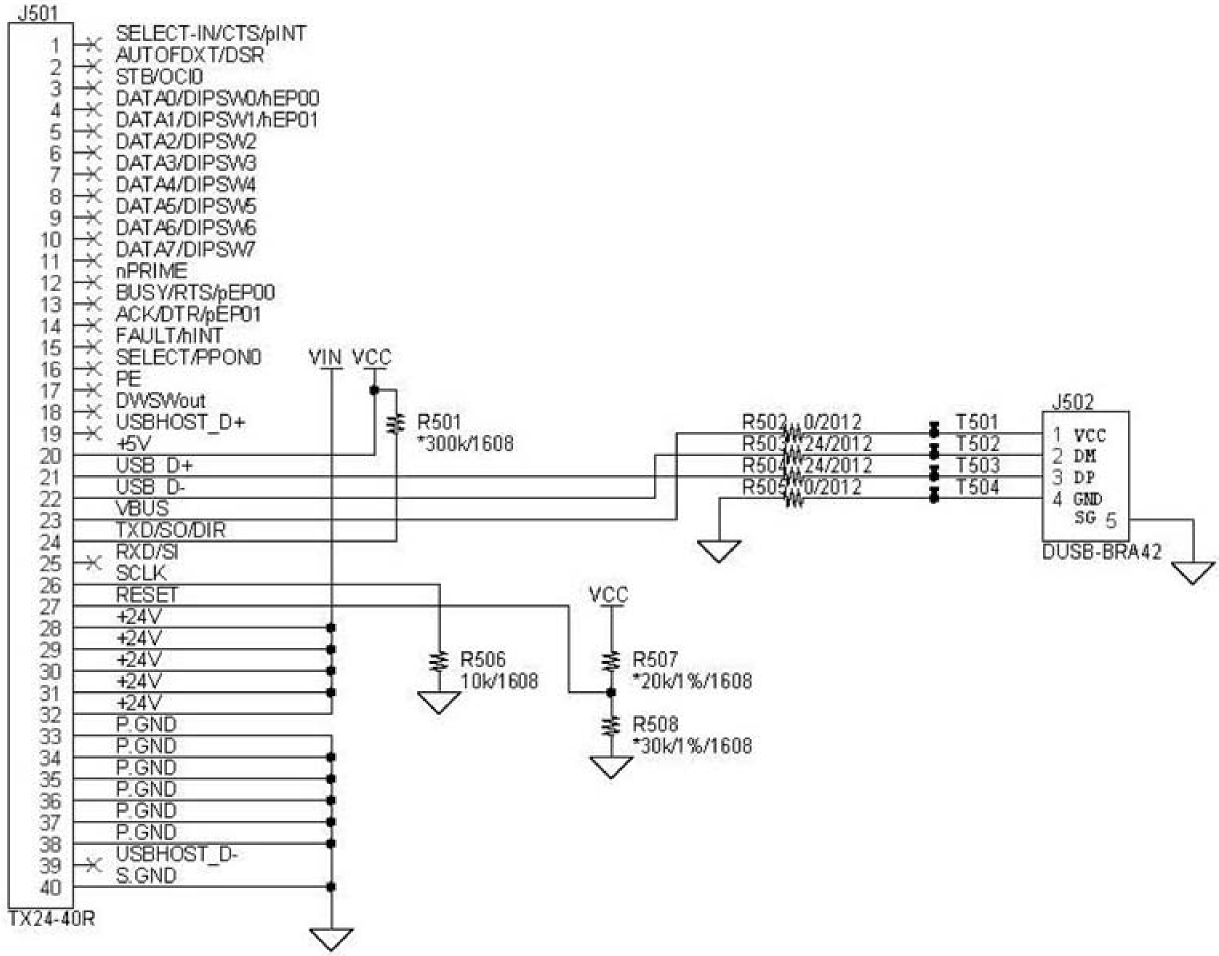
4-4. Serial I/F PCB



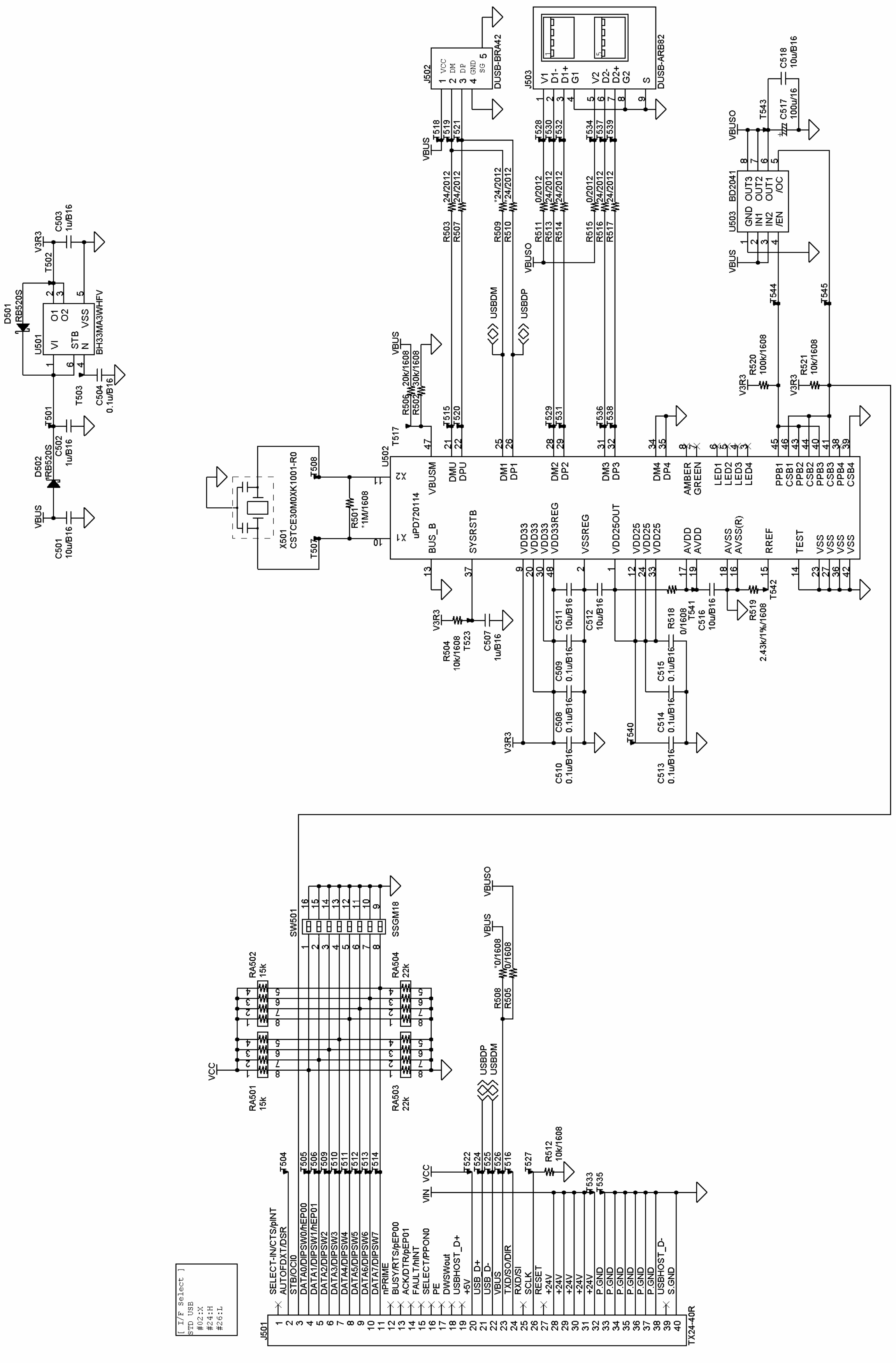
4-5. Parallel I/F PCB



4-6. USB I/F PCB


J501
1 SELECT-IN/CTS/pINT
2 AUTOFDXT/DSR
3 STB/OCI0
4 DATA0/DIPSW0/hEP00
5 DATA1/DIPSW1/hEP01
6 DATA2/DIPSW2
7 DATA3/DIPSW3
8 DATA4/DIPSW4
9 DATA5/DIPSW5
10 DATA6/DIPSW6
11 DATA7/DIPSW7
12 nPRIME
13 BUSY/RTS/pEP00
14 ACK/DTR/pEP01
15 FAULT/hINT
16 SELECT/PPON0
17 PE
18 DWSWout
19 USBHOST_D+
20 +5V
21 USB_D+
22 USB_D-
23 VBUS
24 TXD/SO/DIR
25 RXD/SI
26 SCLK
27 RESET
28 +24V
29 +24V
30 +24V
31 +24V
32 +24V
33 P.GND
34 P.GND
35 P.GND
36 P.GND
37 P.GND
38 P.GND
39 USBHOST_D-
40 S.GND
TX24-40R
VIN
VCC
R501
*300k/1608
R502 0/2012
R503 24/2012
R504 24/2012
R505 0/2012
T501
T502
T503
T504
J502
1 VCC
2 DM
3 DP
4 GND
SG 5
DUSB-BRA42
R506
10k/1608
VCC
R507
*20k/1%/1608
R508
*30k/1%/1608

4-7. USB HUB I/F PCB



4-8. POWERED USB I/F PCB

